



Catalogue  
**2014/2015**

Laser Measuring Tools  
Surveying Equipment  
Environmental Measuring Instruments



# **Benchmark for measuring.** Laser measuring tools and surveying equipment supplied by geo-FENNEL.







## geo-FENNEL – a valued name in the world of surveying.

- » Located in Hesse, Germany we are a mid-sized company which has gained a good reputation as a supplier for laser measuring technology and surveying equipment. Today we are in the front row when users ask for laser measuring devices. Our products are recognised all over the world and we currently deliver them to more than 70 countries worldwide. Our indispensable company philosophy is to provide our customers with innovative, precise and reliable products and to offer first class service. High quality, a good and fair price-performance ratio as well as fast delivery count among our principles. Our cooperative partnership with our customers is essential for us and our international orientation is a main strategy.

**Our extensive experience has convinced customers, for many years.**

## Our product range

- » Our product range includes:

Laser Surveying Instruments

- Rotating Lasers
- Cross and Line Lasers
- Pipe Lasers
- Laser Distance Meters

Classic Surveying Instruments

- Automatic Levels
- Theodolites
- Total stations

Ancillary Products

Measuring Instruments

Environmental Measuring Equipment

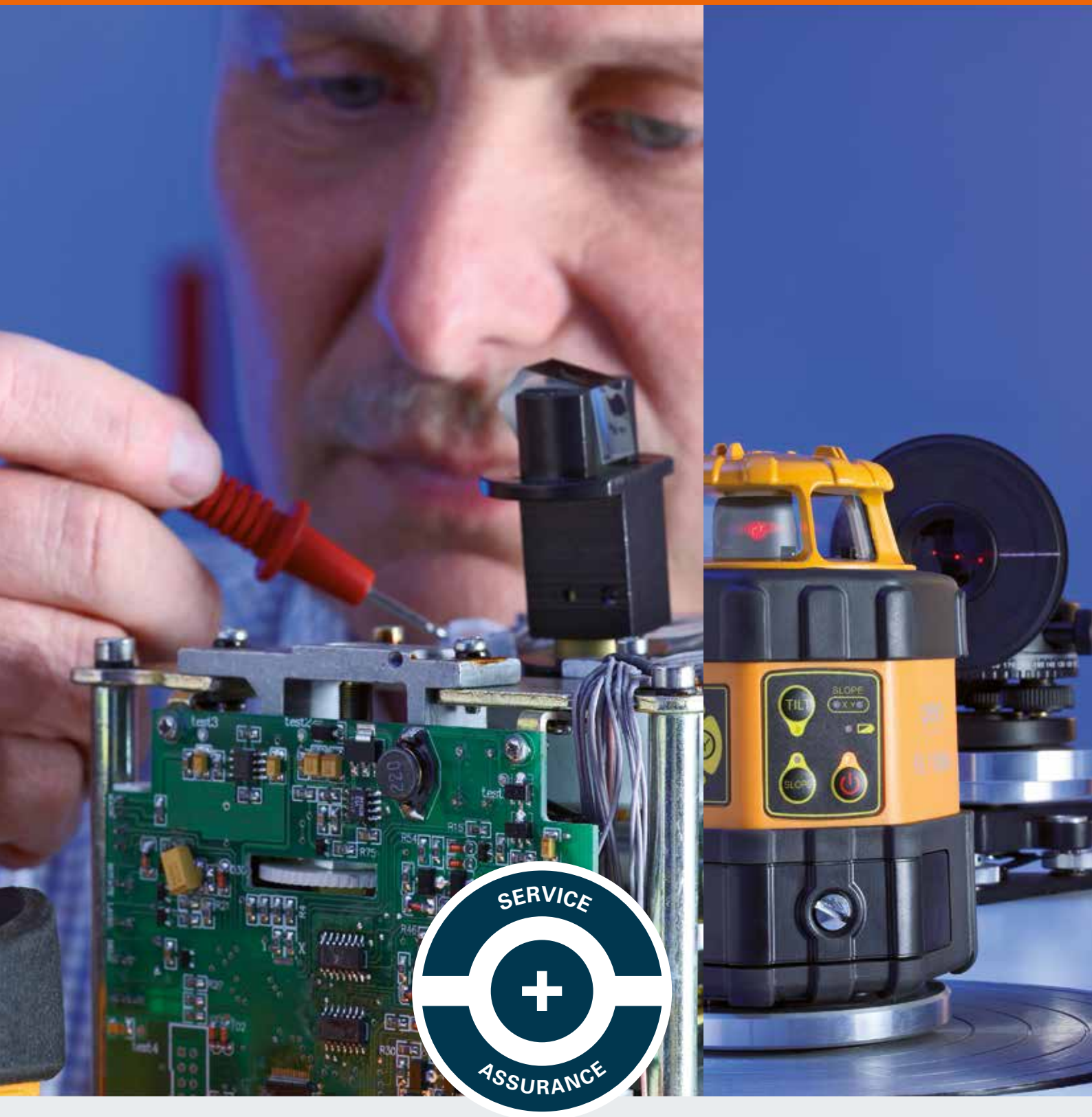
## Our quality standard

- » geo-FENNEL instruments are tested and calibrated using tools and equipment traceable through DKD\* accreditation back to national standards. These test procedures conform to DIN ISO standards.

\*DKD = German Calibration Office

**DKD**

**Quality that is measurable.**  
Enhanced by our commitment  
to service and support.







## Service is our pledge.

- » Many can sell but only a few can back this up with professional advice and extensive service facilities. At geo-FENNEL, our products and services are available at all times, home and abroad and our fully trained personnel are ready to support you with advice at any time. Whether you have questions concerning application, technology or sales we are committed to provide the assistance you require.

State-of-the-art manufacturing technology, the care and continuous training of our employees and our efficient work ethic guarantee you a consistent high level of after sales service. Should a repair become necessary, our repair and spare part departments are ready to help – this applies to our complete product range.

## Guaranteed First Class.

- » We strive to provide the user measuring instruments that offer all the advantages which characterize geo-FENNEL products: easy-to-use, cost effective, accurate measuring performance under almost all conditions with the highest reliability. We offer 2 years guarantee on all products.

However, in the unlikely event that a problem should occur, simply contact your dealer. He will ensure that the product is quickly restored to full working order, or will replace it with a new one.

Quick and easy.

# Tasks

















## Outline of products

» Here you will find fields of application of the instruments for various trades. This outline will give you support to find the ideal tool for your task. These are examples only. Of course, there are many additional fields of application for many other professional groups.

# Tasks

## Outline of products

» Here you will find fields of application of the instruments for various trades. This outline will give you support to find the ideal tool for your task. These are examples only. Of course, there are many additional fields of application for many other professional groups.

TRADE	TASK														
		Excavation	Floor covering	Electrical			Floor laying	Tiling		Windows, doors	Pre-fabricated construction	Ground works	Glazing	Landscape gardening	
Line Laser			■	■				■							
Point Laser					■										
Point and Line Laser			■	■	■			■	■				■		
Line Laser horizontal				■			■						■	■	
Cross Laser Starter			■	■			■	■	■				■		
Cross Laser Professional			■	■	■		■	■	■				■		
Cross Laser with receiver			■	■	■		■	■	■				■		
Horizontal Laser		■					■			■	■			■	
Dual Grade Laser horizontal		■									■			■	
Dual Grade Laser horizontal / vertical		■								■	■			■	
Horizontal and Vertical Laser				■	■		■	■	■	■	■	■	■	■	
Pipe Laser												■			
Theodolite											■	■			
Automatic Level		■									■	■			
Laser Distance Meter			■			■	■		■	■			■		
Inclinometers			■	■		■		■	■	■			■		



[illegible]

	control	timber walls	trenches, tunnels	sewer pipes, drainage control	tracks, profiles	dry mortarless stone walls	stud wall construction	battens, joist	suspended ceilings	raised flooring	wall covering	windows, doors	roof pitch relacing	measurement	stair inclination	roof, pitch, dormer	entablature, framework	parallel inclination	stair cladding, furnishing	
				Dry mortarless con.									Carpentry, timber-frame construction							
				■					■				■		■	■				PAGES
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THE SUBTLE DIFFERENCE:

# SOMETIMES YOU DON'T NOTICE IT.

Continuous innovation and precision, geo-FENNEL offers a measurably high quality product for all applications. Whether on a construction site or in a residential development, exterior or interior – you can always rely on our latest measuring technology to achieve precise results. To that end, we continue to develop our products. Straight from the start you are aware of the quality and innovation integral to geo-FENNEL products.







ALWAYS IN MOTION:

## THE CROSS LINE LASER THAT ROTATES.

The FL 80Tracking SP from the Selection PRO series is very convincing with its unique performance characteristics.

With its tracking function for automatic axis alignment it is significantly superior when compared to other devices within its comparable category. During alignment, the nearest vertical line is automatically centred onto the zero-point of the receiver. Eliminating the tedious and inaccurate manual alignment process which is finally a thing of the past. You can now concentrate on what is essential: the measurement result.







## Duo-Pointer

### Plumb up and down

- » Self levelling laser plummet – replaces the traditional way of plumbing from floor to ceiling.

TECHNICAL DATA	DUO-POINTER	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 575000</b>
Self-levelling range	± 5°	· Laser plummet up / down	· Magnetic target
Accuracy	± 2 mm / 10 m	· Self-levelling	· Padded bag
Working range	30 m*	· Robust housing	· Set of batteries
Laser diode / Laser class	635 nm / 2	· Visual and audible alarm when out of level	
Power supply	3 x AA Alkaline	· Transport lock	
Operating time	15 h	· Built-in magnets	
Temperature range	-10 °C – +45 °C	· 1/4" thread for camera tripod	
Dust / water protection	IP 54	· Dust / water protection	
Weight (instrument only)	0.6 kg		

\* depending on room illumination



## Multi-Pointer

### Five point laser

- » 5 self-levelling laser beams at right-angles to each other: up, down, left, right and forward. Plumb, level, square and align simultaneously – it couldn't be easier.

TECHNICAL DATA	MULTI-POINTER	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 555000</b>
Accuracy	± 2 mm / 10 m	· Easy operation	· Multi-functional mount
Working range	30 m	· Out-of-level alarm	· Magnetic target
Self-levelling range	± 3° – 5°	· Multi-functional mount to attach the instrument to	· Strap attachment
Laser diode / Laser class	650 nm / 2	· floor and wall	· Batteries
Tripod mount	5/8" and 1/4"	· wall frames	· Hard case
Size	80 x 98 x 101.6 mm	· pipes	
Weight (instrument only)	0.74 kg	· tripod (5/8" and 1/4")	
Power supply	3 x AA Alkaline	· Transport lock	
Temperature range	-10 °C – +40 °C	· Robust housing	
		· Dust and water resistant	

\* depending on room illumination



## Torpedo Straight line and level

- » The universal laser spirit level that incorporates a beam splitter to generate a laser dot or a laser line.

TECHNICAL DATA	TORPEDO	FEATURES	SUPPLIED WITH
			ART.-NO. 560000
Accuracy	± 3 mm / 10 m	· Switchable laser dot or laser line	· Batteries
Working range	max. 30 m*	· Stepless rotation of laser line plus 90° lock intervals	· Case
Laser diodes	1 x 635 nm	· 45°, 90° and 180° vials	
Laser class	2	· Magnetic base	
Power supply	2 x AAA Alkaline	· 1/4" thread for tripod	
Operating time	30 h		
Temperature range	0 °C – +40 °C		

\* depending on room illumination



## Square Liner II At the right angle

- » The angle template generates two laser lines at 90° to each other. Ideal for use on floor and all tiling!



TECHNICAL DATA	SQUARE LINER II	FEATURES	SUPPLIED WITH
			ART.-NO. 551000
Accuracy	± 3 mm / 10 m	· Fine and clear visible laser lines	· Batteries
Working range	max. 30 m*	· 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling	· Magnetic target
Laser diodes	2 x 635 nm	· Built-in circular and tubular vials for horizontal and vertical alignment	· Case
Laser class	2		
Power supply	2 x AA Alkaline		
Operating time	48 h		
Temperature range	0 °C – +40 °C		

\* depending on room illumination



## 360° LinerPoint HP

Unique – 360° line  
with 4 laser points



- 1 Supplied with kit
- 2 Operation with tripod
- 3 Multi-functional wall / tripod bracket
  - screw attachment
  - magnetic attachment
  - strap attachment

[illegible]

\* depending on room illumination





## FL 40-Pocket II

### The versatile

- » Robust and handy laser cross level.  
Horizontal and vertical levelling and aligning.

## FL 40-Pocket II HP

### High-Power Version

- » High specification diodes for optimum visibility of laser lines.



TECHNICAL DATA	FL 40-POCKET II	FL 40-POCKET II HP	FEATURES
Self-levelling range (left / right)	± 4°	± 4°	<ul style="list-style-type: none"> <li>· Laser cross</li> <li>· Multi-functional mount               <ul style="list-style-type: none"> <li>- for wall-hanging</li> <li>- for magnetic attachment</li> <li>- for tripod fixing with 5/8" or 1/4" thread</li> </ul> </li> <li>· Locking device for safe transport</li> <li>· Visual and audible alarm when out of level</li> <li>· Pulse function for use with receiver FR 55 / FR 55-M (optional) to extend the working range up to 60 m (HP)</li> </ul>
Accuracy	± 3 mm / 10 m	± 3 mm / 10 m	
Working range without receiver	10 m*	20 m*	
Working range with receiver	40 m	60 m	
Operating time	48 h	48 h	
Power supply	3 x AA Alkaline	3 x AA Alkaline	
Laser diodes / Laser class	635 nm / 2	2	
Dust / water protection	IP 54	IP 54	
Weight	0.8 kg	0.8 kg	
OPTIONAL FR 55	SUPPLIED WITH FL 40-POCKET	SUPPLIED WITH FL 40-POCKET HP	
ART.-NO. 500510	ART.-NO. 541000	ART.-NO. 541100	
	<ul style="list-style-type: none"> <li>· Multi-functional mount</li> <li>· Set of batteries</li> <li>· Magnetic target</li> <li>· Padded carrying bag</li> </ul>	<ul style="list-style-type: none"> <li>· Multi-functional mount</li> <li>· Set of batteries</li> <li>· Magnetic target</li> <li>· Padded carrying bag</li> </ul>	
OPTIONAL FR 55-M			
ART.-NO. 500520			

\* depending on room illumination





## FL 40-3Liner The Best-Seller

- » The ideal measuring tool for interior works! Versatile and efficient. The laser line at 90° is ideally suitable for floor covering tasks (carpet, wood, hard tiles) as well as for wall tiles. Can be used on the floor as the laser lines start directly from the instrument.

## FL 40-3Liner HP High-Power Version

- » High specification diodes for optimum visibility of laser lines.



TECHNICAL DATA		FL 40-3LINER	FL 40-3LINER HP	FEATURES
Self-levelling range	± 3,5°		± 3,5°	<ul style="list-style-type: none"><li>· Laser cross</li><li>· Vertical laser line at 90° to laser cross</li><li>· 3 clearly visible laser lines</li><li>· Locking device for safe transport</li><li>· Visual and audible alarm when out of level</li><li>· Pulse function for use with receiver FR 55 / FR 55-M (optional) to extend the working range up to 60 m (HP)</li></ul>
Accuracy	± 3 mm / 10 m		± 3 mm / 10 m	
Working range without receiver	10 m*		20 m*	
Working range with receiver	40 m		60 m	
Operating time	15 h		15 h	
Power supply	3 x AA Alkaline		3 x AA Alkaline	
Laser diodes / Laser class	635 nm / 2		635 nm / 2	
Dust / water protection	IP 53		IP 53	
Weight	0.86 kg		0.86 kg	
OPTIONAL FR 55		SUPPLIED WITH FL 40-3LINER	SUPPLIED WITH FL 40-3LINER HP	
ART.-NO. 500510	ART.-NO. 530000	ART.-NO. 530100		
	<ul style="list-style-type: none"><li>· Wall / tripod mount</li><li>· Set of batteries</li><li>· Magnetic target</li><li>· Laser intensive glasses</li><li>· Padded carrying case</li></ul>	<ul style="list-style-type: none"><li>· Wall / tripod mount</li><li>· Set of batteries</li><li>· Magnetic target</li><li>· Laser intensive glasses</li><li>· Padded carrying case</li></ul>		
OPTIONAL FR 55-M				
ART.-NO. 500520				

\* depending on room illumination

# Geo3X HP

## Small but powerful



» **The ideal instrument for numerous alignment, measurement and levelling tasks. Projecting 3 high powered laser crosses at 90° to each other.**

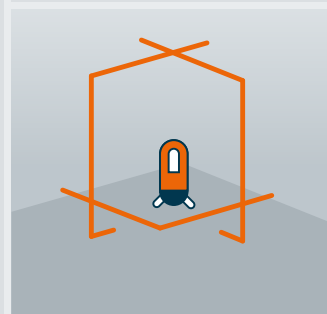
- »
- The versatile multi-functional mount offers a variety of mounting options to increase flexibility and productivity
  - 3 laser crosses
  - Compact, handy size
  - Shock-resistant design suitable for robust use on construction sites
  - Self-levelling function can be switched off for manual use

1 Keypad



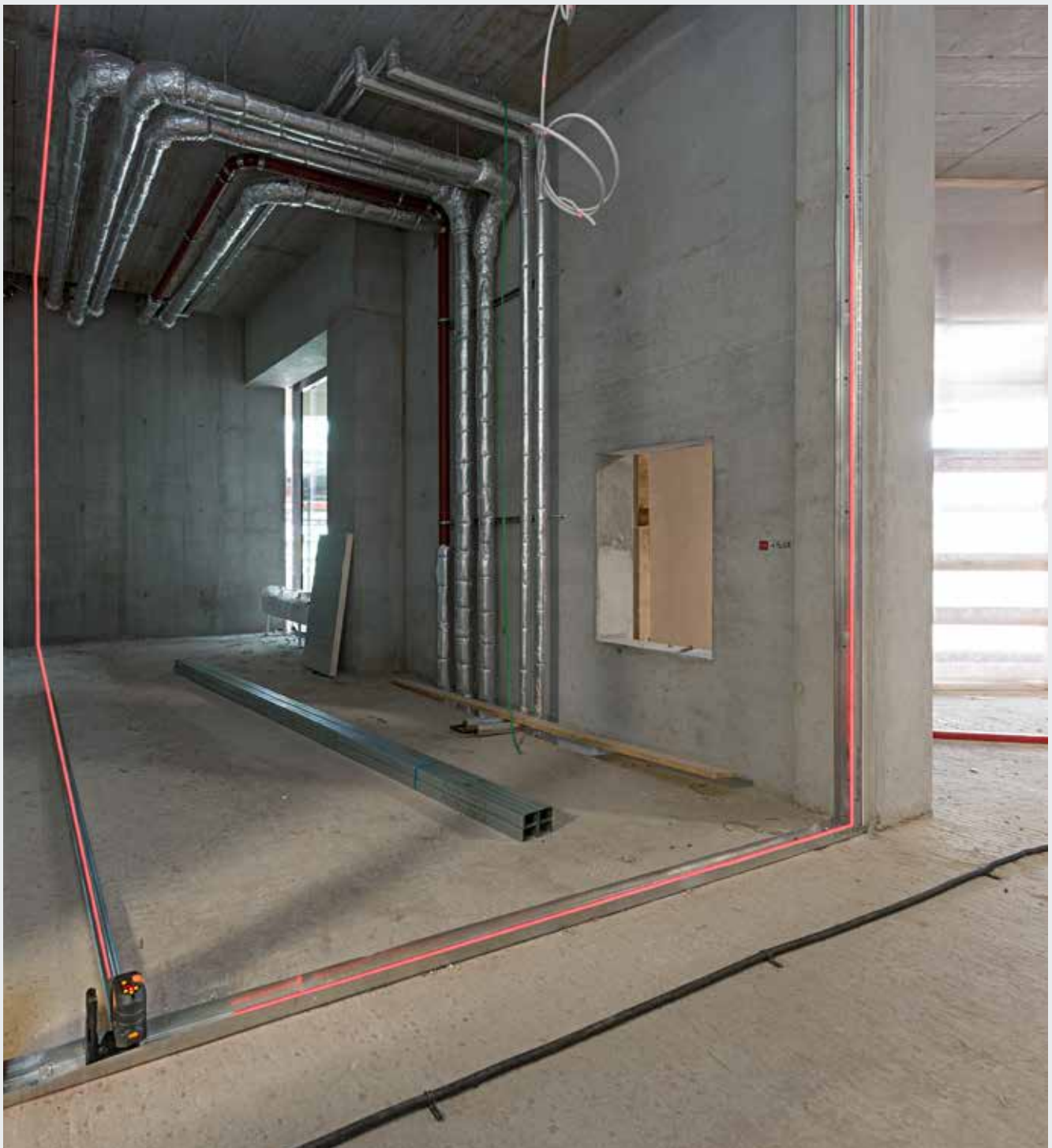
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TECHNICAL DATA	GEO3X HP	FEATURES	SUPPLIED WITH
			ART.-NO. 520600
Self-levelling range	± 3°	· 2 laser crosses at 90° to each other	· Multi-functional mount
Accuracy	± 3 mm / 10 m	· Laser cross to the ceiling	· 3 x AA Alkaline battery
Working range without receiver	20 m*	· Individually selectable laser lines	· Padded carrying bag
Working range with receiver (optional)	60 m	· Self-levelling function can be switched off for manual use	
Power supply	3 x AA Alkaline	· Visual and audible alarm when out of level	
Operating time (all lines switched on)	12 h	· Multi-functional mount with	
Dust/waterprotection	IP 54	· strong magnets on the back face	
Laser diode / class	635 nm / 2	· can be fixed to a wall	
Temperature range	-10 °C – +45 °C	· strap attachment	
Weight (instrument with batteries)	0.8 kg	· height adjustable	
		· 1/4" and 5/8" tripod thread	
		· Pulse function for use with receiver (optional) to extend working range up to 60 m	
		· 1/4" thread on the instruments base	



\* depending on room illumination

1 Use in dry-construction frames



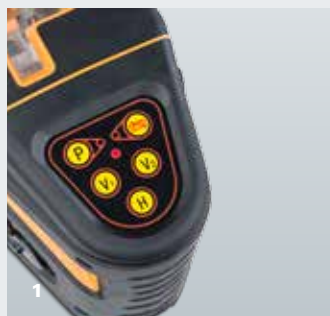


# Geo5X-L360 HP

## The new all-rounder



- 1 Keypad
- 2 What's in the kit
- 3 Multi-functional mount







## FL 55 PLUS HP

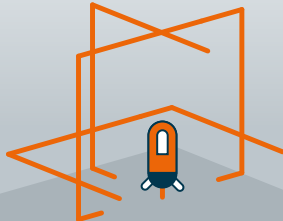
### The Multi-Liner for professionals

» Universal, robust, versatile, accurate – the ultimate tool for the professional! High-power laser diodes ensure optimum line visibility. High accuracy, dust / water protection as well as many other important features for professional use.

1 With receiver FR 55

2 View of keypad and battery case



TECHNICAL DATA		FL 55 PLUS HP	FEATURES	SUPPLIED WITH
				ART.-NO. 500550
Self-levelling range	± 3,5°		<ul style="list-style-type: none"><li>· Dust / water protection to IP 54</li><li>· Rubberized housing</li><li>· 4 laser crosses at 90° to each other</li><li>· Laser cross to the ceiling</li><li>· Self-levelling function can be switched off for manual use</li><li>· Use with receiver FR 55 (standard outfit) to extend working range up to 60 m</li><li>· Use with floor tripod (standard outfit)</li><li>· Use with builder's tripod (optional)</li><li>· Adjustable 360° circle with slow motion screw for perfect alignment</li><li>· Audible and visible alarm when out of level</li></ul>	<ul style="list-style-type: none"><li>· Receiver FR 55 with clamp</li><li>· Floor tripod</li><li>· Magnetic target</li><li>· Laser intensive glasses</li><li>· Set of batteries</li><li>· Charger</li><li>· Battery case for alkaline batteries</li><li>· Container</li></ul>
Accuracy	± 3 mm / 10 m			
with adjusted vial	± 2 mm / 10 m			
Working range without receiver	20 m*			
Working range with receiver	60 m			
Operating time	12 h			
Power supply	NiMH / Alkaline (optional)			
Charger can be used as a				
power supply	yes			
Visible laser diodes	6 x 635 nm			
Laser class	2			
Weight	1.6 kg			
OPTIONAL				
FL 55 PLUS HP W/O FR 55				
ART.-NO. 500450				

\* depending on room illumination





# FL 1000 HP

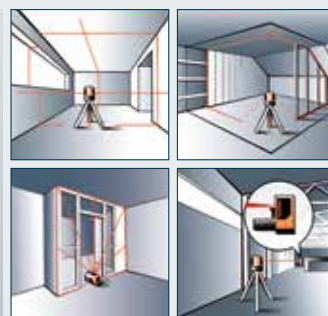
## State-of-the-art

» **With combi-receiver FR 10.**  
**Detect rotating beams and laser lines with one device.**

» With the ultimate FL 1000 HP even difficult measuring tasks become routine. Two vertical laser planes at 90° to each other formed through clearly visible laser lines – and additionally one 360° horizontal laser line projected by the rotation function.

» FL 1000 HP the ultimate for interior works! Even for the most complicated and specialized applications. The whole laser plane can, for example, be tilted manually if the object to be measured does not stand level – such as in the interior construction of ships.

- 1 Remote control
- 2 Combi-receiver FR 10 detects either rotating beam or laser line signals
- 3 Supplied with kit



TECHNICAL DATA		FL 1000 HP	FEATURES	SUPPLIED WITH
Self-levelling range	± 5°			<b>ART.-NO. 582020</b>
Power supply	NiMH / Alkaline		· Electronic self-levelling	· Combi-receiver FR 10
Operating time	10 h		· Horizontal rotating laser beam, visible	· Rechargeable batteries
Charger = power supply	yes		· 4 vertical laser lines at 90° to each other	· Charger
Laser diode / Laser class	635 nm / 2		· Laser cross to the ceiling	· Magnetic target
Temperature range	-10 °C – +40 °C		· Plumb down beam	· Laser intensive glasses
Weight	2.85 kg		· TILT function	· Remote control
Dust / water protection	IP 54		· Slope setting	· Hard case
<b>Rotating laser</b>				
Accuracy	± 1 mm / 10 m		· Combi-receiver for rotating and line beams	
Gradual slope setting in X and Y axis	± 5° (± 9 %)		· Remote control	
TILT function	yes		· On / off remote control	
Working range without receiver Ø	40 m*		· Adjustable 360° circle	
Working range with receiver Ø	400 m		· Slow motion screw	
Scanning without receiver	30 m*		· Automatic shut-off / audible alarm when out of level	
Scanning range	10°, 30°, 60°		· Integrated floor tripod	
Rotating speed rpm	200, 500			
<b>Line laser</b>				
Accuracy	± 2 mm / 10 m			
Working range without receiver	20 m*			
Working range with receiver	60 m			

**COMBI-RECEIVER FR 10**

**ART.-NO. 585510**

\* depending on room illumination

- » The main advantage of the FL 69 HP is the laser dots on the laser lines. On contrary to laser lines the laser dots have a much better visibility on longer distances and under unfavourable (e. g. very bright) light conditions. Therefore, it is easy to work under these circumstances and the laser dots are clearly visible for up to 30 m. When connecting the dots the vertical and horizontal lines as well as the 90° angles can be formed.







## The new class geo-FENNEL responding to our customers' needs.



» Benefiting from our many years of experience in the field of laser measuring technology, our technical expertise as well as listening to our customers' requirements we have developed a new class of lasers for the professional user. Selection PRO is a new range of line laser products that are characterized by the following features:

- Advanced laser diode / prism systems for outstanding visibility of the laser lines
- Lithium-Ion battery technology for permanent full power
- Selected accessories included
- 3 year warranty!\*

Convince yourself of the special efficiency of our Selection PRO products!  
The working ranges of all our line lasers are now categorized as follows:

TYPE	EXAMPLE	WORKING RANGE W/O RECEIVER (RADIUS)	WORKING RANGE WITH RECEIVER (RADIUS)
Standard	FL 40-3Liner	10 m	40 m
HP (High Power)	FL 40-3Liner HP	20 m	60 m
SP (Selection PRO)	FL 70 Premium Liner SP	30 m	80 m
SP (Selection PRO) – Green	FLG 55-Green SP	40 m	–

\* You can extend the warranty of all Selection PRO products from 2 years to 3 years. Simply register at [www.geo-fennel.de/Produktregistrierung](http://www.geo-fennel.de/Produktregistrierung) within 6 weeks of purchase to benefit from this extra cover.

## Selection PRO



Our new Selection PRO range includes:

» **360° Liner SP**

- Compact and practical laser with a 360° horizontal line
- Outstanding visibility of the laser line
- Li-Ion battery

» **FL 40-PowerCross SP**

- Outstanding visibility of the laser lines
- Very long vertical line with 150° fan angle (beyond zenith)
- Manual use
- Extremely rugged design for rough use at construction site

» **FL 66-Xtreme SP**

- Rugged technical design: Stable internal components ensure reliability and accuracy
- Perfect sealing assures dust and water protection according to IP 65
- Battery problems? Not with FL 66 Xtreme with the advantages of Li-Ion battery technology
- Outstanding visibility of the laser lines up to 30 m

» **CrossPointer5 SP**

- Combination of a 5 point and cross line laser
- Projects 6 reference points and 2 reference lines
- Outstanding visibility of the laser lines

» **FL 70 Premium-Liner SP**

- 360° horizontal line, 4 vertical lines, plumb down beam, laser cross to the ceiling = simply the best!
- Motorized self-levelling – quick and precise
- Outstanding visibility of the laser lines
- High accuracy
- Li-Ion battery

» **FL 80 Tracking Liner SP**

- Locate on-grade position of the receiver at the target point
- Press the “Auto” button on the receiver then press an arrow button
- The nearest vertical laser line automatically tracks to coincide with the on-grade position of the receiver

» **FLG 55-Green SP**

- A clear narrow laser line with unbeatable visibility up to 40 m!
- Li-Ion battery



Selection PRO

# 360° Liner SP

## Keep it simple – one continuous line

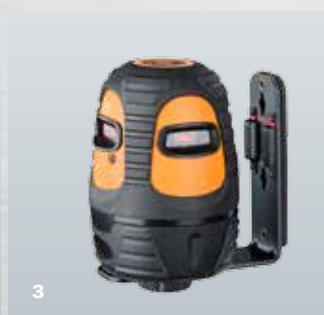


» 360° Liner SP is a Selection PRO product with special features.

- » Outstanding visibility of the laser line
- Li-Ion battery technology
- Self-levelling line laser with 360° horizontal laser line
- Manual function (self-levelling mechanism locked)
- Pulse function to extend the working range with receiver (optional)



- 1 What's in the kit
- 2 Use with tripod (optional)
- 3 Multi-functional mount
  - screw attachment
  - magnetic attachment
  - strap attachment



TECHNICAL DATA	360° LINER SP	FEATURES	SUPPLIED WITH
Self-levelling range	± 5°	<ul style="list-style-type: none"> <li>· 360° horizontal line</li> <li>· Use with receiver FR 55 (optional) to extend working range up to 80 m</li> <li>· Self-levelling function can be locked for manual use</li> <li>· Audible and visual alarm when out of level</li> </ul>	ART.-NO. 510500
Accuracy	± 3 mm / 10 m		<ul style="list-style-type: none"> <li>· Multi-functional mount</li> <li>· Magnetic target</li> <li>· Laser glasses</li> <li>· Li-Ion batteries</li> <li>· Battery charger</li> <li>· Compartment for alkaline battery</li> <li>· Fixing straps</li> <li>· Carrying case</li> </ul>
Working range w/o receiver	30 m*		
Working range with receiver (optional)	80 m		
Power supply / Working time	Li-Ion / 13 h Alkaline / 8 h		
Dust / water protection	IP 54		
Laser diode	635 nm		
Laser class	2		
Temperature range	-10 °C – +40 °C		
		OPTIONAL FR 55	
		ART.-NO. 500510	
		OPTIONAL FR 55-M	
		ART.-NO. 500520	

\* depending on room illumination



Selection PRO



# FL 40-PowerCross SP

## Convincing on the whole line

» FL 40-PowerCross SP is a Selection PRO product with special features

- » Outstanding visibility of the laser lines
- » Very long vertical line with 150° fan angle (beyond zenith)
- » Self-levelling function can be switched off for manual use
- » Extremely rugged design suitable for use on the most demanding construction site – drop tested to 1 m. The sturdy technical design makes a transport lock needless.

1 In manual mode

2 Easy to use – one button keypad



TECHNICAL DATA		FL 40-POWERCROSS SP	FEATURES	SUPPLIED WITH
				ART.-NO. 541500
Self-levelling range	± 3°	<ul style="list-style-type: none"><li>· 1 Laser cross</li><li>· Laser lines switchable separately</li><li>· TILT function for manual use</li><li>· Visual alarm when out of level</li><li>· Multi-functional mount<ul style="list-style-type: none"><li>· height adjustable</li><li>· for wall-hanging with screw</li><li>· strap attachment</li><li>· strong magnet on back side</li></ul></li><li>· for tripod fixing with 5/8" or 1/4" thread</li></ul>	<ul style="list-style-type: none"><li>· Multi-functional mount</li><li>· 3 x AA Alkaline battery</li><li>· Padded bag</li></ul>	
Accuracy	± 3 mm / 10 m			
Working range	30 m* (radius)			
Fan angle horizontal	135°			
Fan angle vertical	150°			
Power supply	3 x AA Alkaline			
Operating time (all lines switched on)	40 h			
Dust / water protection	IP 54			
Laser diode / class	635 nm / 2			
Temperature range	-10 °C – +45 °C			
Weight (instrument with battery)	0.4 kg			





## FL 66-XTREME SP

A laser resistant to extreme conditions: rain, dust, cold – no problem. Li-Ion battery, highly visible lines – this laser benefits from the latest technologies developed by geo-FENNEL.









## CrossPointer5 SP

### 6 reference points plus a laser cross

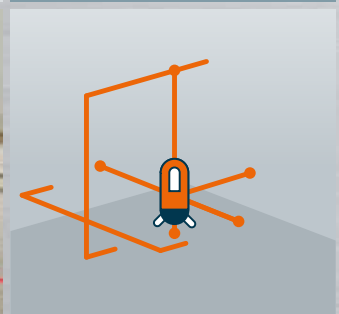
» **CrossPointer5 SP is a Selection PRO product with special features.**

- » Outstanding visibility of the laser lines
- » Combination of a 5 point and cross line laser
- » 6 reference points at 90° to each other
- » Horizontal and vertical lines at 90° to each other

- 1 5 laser points
- 2 Intuitive keypad
- 3 Universal mount



TECHNICAL DATA	CROSSPOINTER5 SP	FEATURES	SUPPLIED WITH
Self-levelling range	± 4°	<ul style="list-style-type: none"> <li>· 2 laser lines form a laser cross</li> <li>· 5 laser points: back, left, right, ceiling, floor</li> <li>· Plumbing function</li> <li>· Multi-functional mount</li> <li>· Strong magnets on the base</li> <li>· Strap attachment, rotatable</li> <li>· Use with receiver (optional)</li> <li>· Self-levelling function can be locked for manual use</li> </ul>	<b>ART.-NO. 531500</b>
Accuracy	± 3 mm / 10 m		<ul style="list-style-type: none"> <li>· Universal mount</li> <li>· Laser glasses</li> <li>· Magnetic target</li> <li>· Set of batteries</li> <li>· Container</li> </ul>
<b>Line laser function</b>	1 laser cross: front		<b>OPTIONAL</b>
Working range w/o receiver	30 m*		
Working range with receiver	80 m (optional)		<b>FR 55</b>
Sector angle Hz-line	155°		
Sector angle V-line	160°		<b>ART.-NO. 500510</b>
<b>Point laser function</b>	5 laser dots: back, left, right, up, down		
Working range w/o receiver	30 m		<b>OPTIONAL</b>
Power supply / Operating time	Alkaline / 7 h		
Dust / water protection	IP 54	<b>ART.-NO. 500520</b>	<b>FR 55-M</b>
Laser diode / Laser class	635 nm / 2		
Temperature range	-10 °C – +45 °C		
Size	115 x 70 x 115 mm		



\* depending on room illumination

Selection PRO

# FL 70 Premium-Liner SP

## Technology at its best



» FL 70 SP is a Selection PRO product with special features.

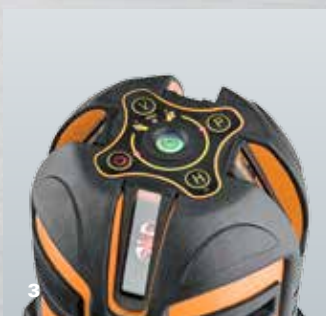
- » · Outstanding visibility of the laser line
- Li-Ion battery technology
- High accuracy of  $\pm 1 \text{ mm} / 10 \text{ m}$
- Motorized self-levelling cross line laser
- 4 vertical lines at  $90^\circ$  to each other,  $360^\circ$  horizontal line, plumb up cross, plumb down beam
- Quick self-levelling and extremely stable performance
- Slope function: Laserplane can be tilted by using the remote control

1 Receiver FR 55 to extend the working range up to 80 m

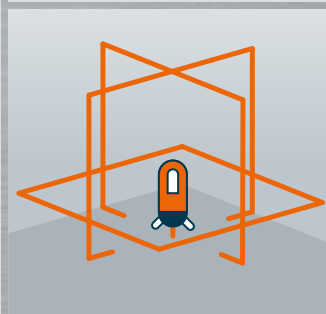
2 Remote control for setting slopes

3 Circular bubble vial for optimal positioning

4 What's in the kit



TECHNICAL DATA	FL 70 PREMIUM-LINER SP	FEATURES	SUPPLIED WITH
Self-levelling range	$\pm 3^\circ$	· 5 laser crosses	ART-NO. 582000
Accuracy	$\pm 1 \text{ mm} / 10 \text{ m}$	· 4 vertical lines at $90^\circ$ to each other	· Receiver FR 55 with clamp
Working range w/o receiver	30 m*	· $360^\circ$ horizontal line	· Integrated floor tripod
Working range with receiver	200 m	· Laser cross to the ceiling	· Remote control
Power supply	Li-Ion	· Plumb down beam	· Li-Ion batteries and battery charger
Operating time	6–14 h	· Self-levelling function can be switched off	· Magnetic target
	depending on number of laser lines switched on	· Use with receiver FR 55 to extend working range up to 80 m	· Laser glasses
Dust / water protection	IP 54	· Remote control for setting slopes	· Adapter for tripod connection
Laser diode	635 nm	· Adjustable $360^\circ$ circle	· Compartment for alkaline batteries
Laser class	2	· Slow motion screw	· Container
Temperature range	$-10^\circ\text{C} - +45^\circ\text{C}$	· Audible and visible alarm when out of level	
		· Integrated floor tripod	
		· 5/8" thread for use with standard tripod	



\* depending on room illumination

**Selection PRO**

# FL 80 Tracking Liner SP

» **The new FL 80Tracking Liner SP is the latest product in our Selection PRO range which redefines innovation and ease of use.**

» Due to its tracking function it is unique when compared to all other products in its category.

The vertical laser line automatically aligns with the on-grade position of the receiver. This self-alignment of the instrument eliminates arduous manual alignment.



- 1 Intuitive keypad
- 2 Receiver FR 57-TR to extend working range up to 80 m and to use at tracking function
- 3 What's in the kit

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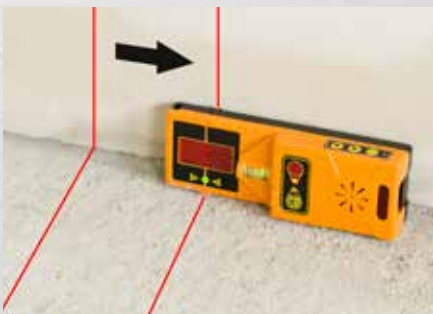
\* depending on room illumination



### » Perfect alignment – the easy way!

» The automatic tracking function of the FL 80 Tracking Liner SP saves you time and money eliminating the need for manual alignment. The alignment is done automatically via the receiver.

- Activate the tribrach motor
- Locate on-grade position of the receiver at the target point
- Press the "Auto" button on the receiver then press an arrow button
- The nearest vertical laser line automatically tracks to coincide the on-grade position of the receiver



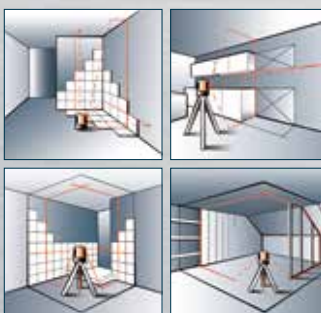
**Selection PRO**

# FLG 55-Green SP

## The new green



- » **Up to 40 m visibility without receiver!**
- » Self-levelling cross line laser with 2 vertical lines, 1 horizontal line, plumb down beam. FLG 55-Green SP is a Selection PRO product with special features.
- »
  - Outstanding laser line visibility
  - Use up to 40 m with 8 mm line width
  - A clear narrow laser line with unbeatable visibility
  - Li-Ion battery technology



TECHNICAL DATA		FLG 55-GREEN SP	FEATURES	SUPPLIED WITH
				ART.-NO. 500120
Self-levelling range	± 5°	<ul style="list-style-type: none"><li>· 2 laser crosses at 90° to each other</li><li>· Laser cross to the ceiling</li><li>· Plumb down beam to the floor</li><li>· Self-levelling function can be switched off for manual use</li><li>· Optional use of alkaline batteries</li><li>· Transport lock</li><li>· Audible and visual alarm when out of level</li><li>· Mini tripod</li><li>· 5/8" connection for use with standard tripod</li></ul>	<ul style="list-style-type: none"><li>· Wall / tripod mount</li><li>· Mini tripod</li><li>· Magnetic target</li><li>· Laser glasses</li><li>· Li-Ion batteries and battery charger</li><li>· Compartment for alkaline batteries</li><li>· Container</li></ul>	
Accuracy	± 2 mm / 10 m			
Working range w/o receiver	40 m*			
Line width at 20 m	4 mm			
Line width at 40 m	8 mm			
Laser diode	532 nm			
Laser class	2			
Power supply	Li-Ion			
Operating time	5 h			
Charger = power supply	yes			
Temperature range	0 °C – +45 °C			
Dust / water protection	IP 54			
Weight (instrument only)	1.05 kg			

\* depending on room illumination



## FPL L Positioning Line Laser

» Positioning lasers are especially suited for use in manufacturing industry and in trade for marking and positioning.

TECHNICAL DATA	FPL L-5	FPL L-10	FPL L-20	FEATURES
	ART.-NO. 519005	ART.-NO. 519010	ART.-NO. 519020	
Visible laser line	red	red	red	<ul style="list-style-type: none"> <li>· Projects a clearly visible laser line</li> <li>· Power supply 220 V with switch and plug</li> <li>· Multi-functional mount (rotatable and swivelling)</li> </ul>
Laser wave length	635 nm	635 nm	635 nm	
Integrated laser diode	5 mW	10 mW	20 mW	
Laser output power	< 1 mW	< 1 mW	< 5 mW	
Laser class	2	2	3R	
Focusing	0–10 m focusable	0–10 m focusable	0–10 m focusable	
Fan angle	84°	84°	84°	
Temperature range	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	
Dust / water protection	IP 41	IP 41	IP 41	
Dimensions (without mount)	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	Ø 22,5 x 89 mm	



## FPL C Positioning Cross Laser

TECHNICAL DATA	FPL C-5	FPL C-10	FPL C-20	FEATURES
	ART.-NO. 519105	ART.-NO. 519110	ART.-NO. 519120	
Visible laser cross	red	red	red	<ul style="list-style-type: none"> <li>· Projects a clearly visible laser cross</li> <li>· Power supply 220 V with switch and plug</li> <li>· Multi-functional mount (rotatable and swivelling)</li> </ul>
Laser wave length	635 nm	635 nm	635 nm	
Integrated laser diode	5 mW	10 mW	20 mW	
Laser output power	< 1 mW	< 5 mW	< 5 mW	
Laser class	2	2	3R	
Focusing	10 m	10 m	10 m	
Fan angle	120°	120°	120°	
Temperature range	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C	
Dust / water protection	IP 43	IP 43	IP 43	
Dimensions (without mount)	Ø 41 x 55 mm	Ø 41 x 55 mm	Ø 41 x 55 mm	



# Line and Cross Lasers Outline

			Laser class	Scheme of projected lines	Vertical lines	Horizontal laser range / angle	Laser points
510000	360° LINERPOINT HP		2		–	360°	4
531000	DUOCROSSPOINTER3 HP		2		1	110°	3
541000 541100	FL 40-POCKET II FL 40-POCKET II HP		2		1	130°	–
530000 530100	FL 40-3LINER FL 40-3LINER HP		2		2	110°	–
520600	GEO3X HP		2		2	150°	–
533000	GEO5X-L360 HP		2		3	360°	–
500550	FL 55 PLUS HP		2		3	220°	–
581500	FL 69 HP		2		4	360°	8
510500	360° LINER SP		2		–	360°	–
541500	FL 40-POWERCROSS SP		2		1	135°	–
580500	FL 66-XTREME SP		2		4	130°	–
531500	CROSSPOINTER5 SP		2		1	155°	5
582000	FL 70 PREMIUM-LINER SP		2		4	360°	–
583000	FL 80 TRACKING LINER SP		2		4	130°	–
500120	FLG 55-GREEN SP		2		2	150°	–
585020	FL 1000 HP		2		4	360° (rotation)	–

Plumb down beam	Accuracy / 10 m	Dust / water protection	Shock protected	Working range w/o receiver (radius)	Working range with receiver (radius)	Power supply	Receiver	PAGES
–	± 3 mm	IP 54	–	20 m	60 m	Alkaline	optional	16
yes	± 3 mm	IP 54	–	20 m	–	Alkaline	–	17
–	± 3 mm	IP 54	–	10 m / 20 m	40 m / 60 m	Alkaline	optional	18
–	± 3 mm	IP 53	–	10 m / 20 m	40 m / 60 m	Alkaline	optional	19
–	± 3 mm	IP 54	yes	20 m	60 m	Alkaline	optional	20
yes	± 2 mm	IP 54	–	20 m	60 m	Li-Ion	optional	22
yes	± 2 mm	IP 54	–	20 m	60 m	NiMH	inclusive	24
yes	± 2 mm	IP 54	–	20 m	60 m	Li-Ion	inclusive	26
–	± 3 mm	IP 54	–	30 m	80 m	Li-Ion	optional	30
–	± 3 mm	IP 54	yes	30 m	–	Alkaline	–	31
yes	± 2 mm	IP 65	yes	30 m	80 m	Li-Ion	optional	33
yes	± 3 mm	IP 54	–	30 m	80 m	Alkaline	optional	34
yes	± 1 mm	IP 54	–	30 m	200 m	Li-Ion	inclusive	35
yes	± 2 mm	IP 54	–	30 m	80 m	Li-Ion	inclusive	36
yes	± 2 mm	IP 54	–	40 m	–	Li-Ion	–	38
yes	± 2 mm	IP 54	–	20 m	60 m	NiMH	inclusive	25



MORE PRECISELY:

EASY TO USE, ACCURATE,  
ROBUST AND RELIABLE.

Efficient, flexible and reliable – some of the characteristics that define all geo-FENNEL rotating lasers. Whether used for interior applications or on the most demanding outdoor construction sites, in the rain, wind, cold or hot conditions: Our robust, water and dust protected laser measuring instruments provide the precise measuring results, even under unfavourable weather conditions.







## FL 30

For horizontal  
and vertical use

» A robust manual laser, quick set-up with two vials and easy to operate. For horizontal and vertical measurements. Scanning, laser point mode and permanent 90° beam to zenith. The ideal laser for indoor applications, suitable for simple outdoor jobs.

# FL 30 SET

- 1 Vertical use
- 2 Receiver and clamp
- 3 Wall mount, tripod, levelling staff
- 4 What's in the kit

- » **FL 30 with all the necessary accessories to start working immediately!**
- » Consists of: Elevating tripod, wall mount, magnetic target, laser glasses for better visibility of the laser beam, 2.45 m levelling staff and a receiver that all fit neatly into the handy carrying case.

[illegible]

\* depending on room illumination



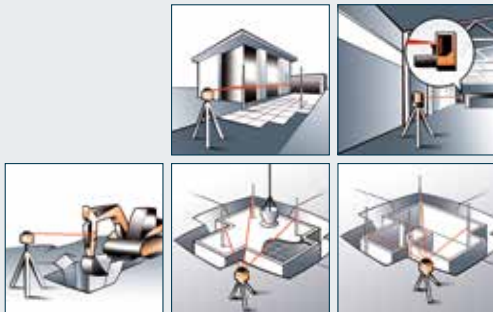
## FL 100HA Junior

### Quick and easy to use

- » Self-levelling rotating laser for horizontal applications
- » 3 buttons for user-friendly functionality
- » Robust and efficient

1 With receiver FR 45

2 Supplied with kit



1



2



TECHNICAL DATA	FL 100 HA JUNIOR	FEATURES	SUPPLIED WITH
Self-levelling range	± 5°	<ul style="list-style-type: none"> <li>Auto shut-off when out of self-levelling range</li> <li>TILT alarm function</li> <li>VWS function</li> <li>Powerful rechargeable battery</li> <li>Dust / water protection to IP 65</li> </ul>	ART.-NO. 212000
Accuracy	± 1 mm / 10 m		Receiver FR 45 with clamp for levelling staff
Working range with receiver FR 45 Ø	600 m		Rechargeable battery and charger
Rotating speed rpm	600		Battery compartment for alkaline batteries
Power supply / Operating time	NiMH / 24 h		Container
	Alkaline / 36 h		
Temperature range	-20 °C – +50 °C		
Laser diode / Laser class	635 nm / 2		
Dust / water protection	IP 65		
Weight	2.4 kg		





# FL 110HA

## The standard for horizontal laser levels

- » The FL 110HA is a real professional in its business: Compact and robust with a rubberized housing and metal cover for effective site protection. Easy and intuitive operation.
- » High performance: Li-Ion technology for continuous operation, VWS function (Vibration-Wind-Security), automatic TILT function, zonal control, large working range, high accuracy – the FL 110HA does not lack anything.

1 With receiver FR 45

2 Supplied with kit



TECHNICAL DATA	FL 110HA	FEATURES	SUPPLIED WITH
			ART.-NO. 211000
Self-levelling range	± 5°	<ul style="list-style-type: none"> <li>· Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections – increases site safety</li> <li>· Robust and dust / water protected housing to IP 66, rubberized protection and metal top</li> <li>· Large working range and high accuracy</li> <li>· Automatic shut-off when out of self-levelling range</li> <li>· Manual slope setting of X and Y axes up to ± 5°</li> <li>· 360° reception range of remote control</li> <li>· VWS-function</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 45 with clamp</li> <li>· Li-Ion rechargeable battery with charger</li> <li>· Battery case for alkaline batteries</li> <li>· Remote control</li> <li>· Container</li> </ul>
Accuracy	± 0.75 mm / 10 m		
Working range with receiver	800 m		
Slope setting in X and Y axis	± 5° (9 %)		
Rotating speed	800 rpm		
Power supply / Operating time	Li-Ion / 40 h 6 x AA Alkaline / 40 h		
Temperature range	-10 °C – +45 °C		
Laser diode / Laser class	635 nm / 2		
Weight	2.1 kg		
Dust / water protection	IP 66		



# FL 210A

## Instant self-levelling



» Horizontal and vertical laser for interior and exterior applications. This instrument is characterized by its versatility, instant self-levelling, stability and a robust technical construction. Instant self-levelling makes it ideal when applications necessitate frequent positional changes, i. e. floor construction.

Scanning functions, permanent 90° beam to zenith, automatic shut-off when misaligned and a comprehensive set of accessories make these models ideal for the all-rounder.

1 Vertical application



TECHNICAL DATA	FL 210A	FEATURES	SUPPLIED WITH
			ART.-NO. 291500
Self-levelling range	± 3,5°	· Instant self-levelling	· Receiver FR 45 with clamp
Accuracy horizontal	± 1 mm / 10 m	· Horizontal self-levelling with automatic shut-off and audible alarm when out of tolerance	· Remote control
Accuracy vertical	± 1,5 mm / 10 m	· Easy vertical set-up with one foot screw	· Rechargeable batteries and charger
Working range with receiver Ø	400 m	· Variable rotating speed	· Floor / wall mount
Rotating speed	150, 200, 250, 300 rpm	· Scanning and laser dot mode	· Magnetic target
Laser diodes / Laser class	635 nm / 2	· Permanent 90° beam to zenith	· Laser glasses
Scan angle	0°, 20°, 40°	· NiMH batteries	· Carrying case
Temperature range	-10 °C – +50 °C	· Can be used with alkaline batteries	
Dust / water protection	IP 66	· Dust / water protection IP 66	
Dimensions	180 x 162 x 202 mm		
Weight (instrument only)	2.8 kg		
Power supply	4 x C NiMH*		

\* with 6.4 V intelligent charger, battery can be charged externally, alkaline batteries can be used alternatively



## FL 240HV

### The all-rounder

» Versatile and easy to use. Fully automatic self-levelling in horizontal and vertical. A feature packed laser designed for the interior professional with a dust and water protection making it also suitable for outdoor use. Variable scanning and laser point mode for optimum beam visibility.



TECHNICAL DATA	FL 240HV	FL 240HV	FLG 240HV-GREEN
	ART-NO. 244020	ART-NO. 244000	ART-NO. 244500
Self-levelling range	± 5°	± 5°	± 5°
Accuracy horizontal	± 1 mm / 10 m	± 1 mm / 10 m	± 1 mm / 10 m
Accuracy vertical	± 1.5 mm / 10 m	± 1.5 mm / 10 m	± 1.5 mm / 10 m
Working range with receiver Ø	500 m	700 m	400 m
Scanning w/o receiver	40 m*	60 m*	40 m*
Rotating w/o receiver Ø	40 m*	60 m*	60 m*
Scanning modes	2 stage	2 stage	2 stage
Slope setting in X and Y axis	± 5° (± 9 %)	± 5° (± 9 %)	± 5° (± 9 %)
Rotating speed rpm	200, 500	200, 500	200, 500
Operating time / Power supply	24 h (NiMH)	24 h (NiMH)	24 h (NiMH)
	40 h (Alkaline)	40 h (Alkaline)	40 h (Alkaline)
Temperature range	-10 °C – +50 °C	-10 °C – +50 °C	-20 °C – +50 °C
Laser diode / Laser class	2	3R	2
Dust / water protection	IP 54	IP 54	IP 54
Weight (instrument only)	1.95 kg	1.95 kg	1.95 kg

#### FEATURES

- Visible laser beam
- 2 rotating speeds
- Variable scanning mode
- Laser dot mode
- Manual slope setting up to ± 5° (± 9 %) in X and Y axis
- Permanent 90° plumb beam
- Automatic TILT function
- Remote control screen (on / off)
- Closed top cover housing offers excellent protection against dust and water

\* depending on room illumination



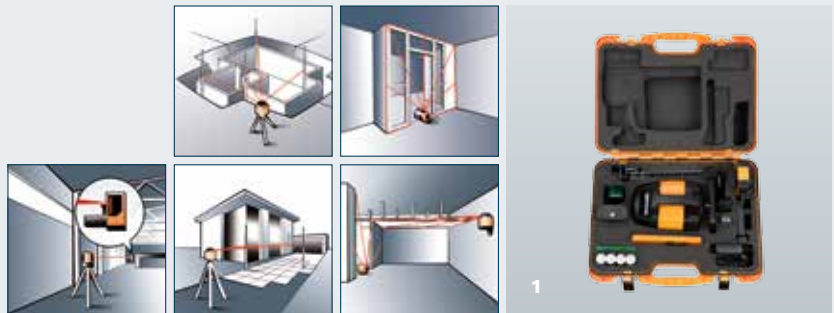
# FLG 240HV-Green

## The all-rounder in green

» The new generation: Now with laser class 2 and enhanced visibility of the laser line. Additionally the temperature range was increased to -20 °C to +50 °C.

» Horizontal and vertical laser for interior applications. Similar functions to the FL 240HV but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances.

1 Supplied with kit

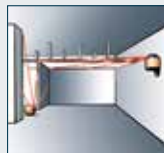


### SUPPLIED WITH FL 240HV

- Receiver FR 45 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent charger
- Battery case for alkaline batteries
- Adjustable wall and ceiling mount
- Laser glasses
- Magnetic target
- Container

### SUPPLIED WITH FLG 240HV GREEN

- Receiver FRG 45 with clamp
- Remote control
- Rechargeable battery (NiMH)
- Intelligent charger
- Battery case for alkaline batteries
- Adjustable wall and ceiling mount
- Laser glasses
- Magnetic target
- Container



## FL 260VA Best in class

- » Fully automatic horizontal and vertical self-levelling. Compact ergonomic design and intuitive operation. The ultimate multi-functional laser for interior and exterior applications.
- »
  - High accuracy of  $\pm 0,5 \text{ mm} / 10 \text{ m}$
  - Dust / water protection to IP 66 as well as especially protected housing
  - Li-Ion battery technology
  - Enhanced scanning functions with small increments and a large range of  $180^\circ$
  - Permanent  $90^\circ$  plumb beam up / down for right angles
  - Automatic TILT function
  - VWS function (Vibration-Wind-Security) – rotation will not be stopped due to light ground and wind vibrations
  - Slope functions:
    - Manual slope setting in X and Y axis or
    - One axis manual slope, second axis self-levelled
  - On / Off remote control function: to avoid interference with other remote controls, mobile phones or other electronic devices on site
  - Integrated floor mount with centring mark

### FEATURES

- Visible laser beam
- Adjusted slope setting (manual) up to  $\pm 5^\circ$  ( $\pm 9 \%$ ) in X and Y axis
- Single slope setting up to  $\pm 5^\circ$  ( $\pm 9 \%$ )
- 2 rotating speeds
- Variable scanning and laser point mode
- Permanent  $90^\circ$  beam to zenith
- VWS function combined with TILT function
- Automatic TILT function
- Remote control screen
- Use with rechargeable batteries; alkaline batteries alternatively
- Li-Ion battery technology / intelligent charger
- Dust / water protection IP 66

### SUPPLIED WITH FL 260VA

- Receiver FR 45 with clamp
- Remote control
- Rechargeable batteries and charger
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case

### SUPPLIED WITH FLG 260VA-GREEN

- Receiver FRG 45-Green with clamp
- Remote control
- Rechargeable batteries and charger
- Floor mount
- Magnetic target
- Laser glasses
- Carrying case



## FLG 260VA-Green

### The best in green

- » **The new generation: Now with laser class 2 and enhanced visibility of the laser line. Additionally the temperature range was increased to -20 °C to +50 °C.**
- » Same features like FL 260VA combined with superior visibility of the green laser beam; for interior application.



TECHNICAL DATA	FL 260VA	FL 260VA	FLG 260VA-GREEN
	ART.-NO. 242020	ART.-NO. 242000	ART.-NO. 242500
Self-levelling range	± 5°	± 5°	± 5°
Accuracy horizontal	± 0.5 mm / 10 m	± 0.5 mm / 10 m	± 0.5 mm / 10 m
Accuracy vertical	± 1.0 mm / 10 m	± 1.0 mm / 10 m	± 1.0 mm / 10 m
Working range with receiver Ø	800 m	1000 m	600 m
Scanning w/o receiver	40 m*	60 m*	40 m*
Rotating w/o receiver Ø	40 m*	60 m*	60 m*
Rotating speed	800, 300 rpm	800, 300 rpm	800, 300 U/min
Laser diode / Laser class	2	3R	2
Scan angle	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°
Manual slope setting X and Y axis	± 5° (± 9 %)	± 5° (± 9 %)	± 5° (± 9 %)
Single slope	One axis manual slope, second axis self-levelled		
Power supply	3.6 V Li-Ion battery	3.6 V Li-Ion battery	3.6 V Li-Ion battery
Operating time Li-Ion battery	50 h	50 h	25 h
Temperature range	-10 °C – +50 °C	-10 °C – +50 °C	-20 °C – +50 °C
Dust / water protection	IP 66	IP 66	IP 66
Weight	2.6 kg	2.6 kg	2.6 kg

\* depending on room illumination





» **NEW** – Tracking function for automatic axis alignment.  
Including receiver FR 77-MM with mm-indication.

» • **Tracking functions:**

- The laser plane is automatically centred to the receiver “on-grade”
- Vertical: in both X and Y axis
- Horizontal: one axis X or Y, other axis horizontal self-levelled

- » • Fully automatic horizontal and vertical self-levelling. Compact ergonomic design and intuitive operation
- High accuracy of  $\pm 0.5 \text{ mm} / 10 \text{ m}$
  - Enhanced scanning functions with small increments and a large range of  $180^\circ$
  - Permanent  $90^\circ$  plumb beam up / down for right angles
  - Automatic TILT function
  - VWS function (Vibration-Wind-Security) – rotation will not be stopped due to light ground and wind vibrations
  - Slope functions:
    - Manual slope setting in X and Y axis or
    - One axis manual slope, second axis self-levelled
  - Li-Ion battery technology
  - On / Off remote control function: to avoid interference with other electronic devices
  - Integrated floor mount with centring mark



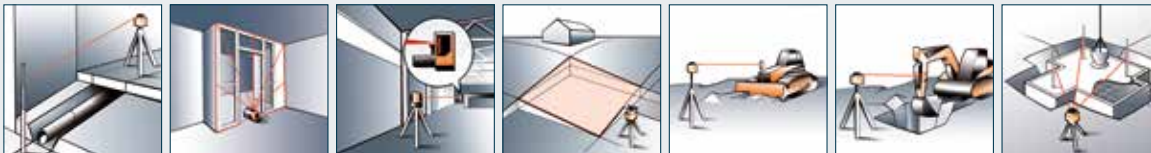
## FL 500HV-G

# The versatile grade laser for interiors and exteriors



### » High tech lasers with the following features:

- » · Fully automatic self-levelling in horizontal, vertical and grade
- Slope functions:
  - Horizontal:
    - Digital grade setting of X and Y axis up to  $\pm 10\%$
    - Manual slope setting of X and Y axis
  - Vertical:
    - Direction of X axis can be set up to  $\pm 10\%$  with Y axis self-levelled
    - Direction of X and Z axis can be set manually
- Automatic TILT function
- VWS function (Vibration-Wind-Security)
  - Rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- Fully functional 9-channel 2-way RF remote control
- Li-Ion battery technology
- 4-step scanning function



FEATURES	SUPPLIED WITH FL 500HV-G
<ul style="list-style-type: none"> <li>· Dual Axis Laser</li> <li>· Horizontal and vertical</li> <li>· Digital grade adjustment</li> <li>· Monitored grade</li> <li>· TILT function</li> <li>· VWS function</li> <li>· 90° beam to zenith</li> <li>· Illuminated display</li> <li>· 2-way RF remote control</li> <li>· Manual function</li> <li>· 4-step scanning function</li> <li>· Operation with rechargeable Li-Ion or alkaline batteries</li> <li>· Dust / water protection IP 66</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 45 with clamp</li> <li>· 2-way RF remote control</li> <li>· Li-Ion batteries and charger</li> <li>· Vertical mount</li> <li>· Telescopic viewfinder</li> <li>· 360° horizontal fine adjustment bracket</li> <li>· Container</li> </ul>







1 With receiver

2 With 360° horizontal fine adjustment bracket

3 With 9-channel 2-way RF remote control

4 Complete kit supplied in container



1



2



3



4

TECHNICAL DATA	FL 500HV-G	FL 500HV-G
	ART.-NO. 231020	ART.-NO. 231000
Self-levelling range	± 8°	± 8°
Accuracy horizontal	± 0.5 mm / 10 m	± 0.5 mm / 10 m
Accuracy vertical	± 1 mm / 10 m	± 1 mm / 10 m
Working range with receiver Ø	900 m	1200 m
Scanning w/o receiver	40 m*	60 m*
Rotating w/o receiver Ø	40 m*	60 m*
Laser diode / Laser class	2	3R
Scanning ranges	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°
Horizontal slope setting		
X axis	± 10.000 %	± 10.000 %
Y axis	± 10.000 %	± 10.000 %
X and Y axis	Σ ± 14 %	Σ ± 14 %
Vertical slope setting		
X axis	± 10.000 %	± 10.000 %
Y(Z) axis	horizontal self-levelled	horizontal self-levelled
Rotating speed	300 / 600 / 1100 rpm	300 / 600 / 1100 rpm
Operating time	40 h	40 h
Power supply	intelligent / Li-Ion	intelligent / Li-Ion
	Alkaline batteries (optional)	Alkaline batteries (optional)
Remote control range	150 m	150 m
Remote control channels	9	9
Temperature range	-10 °C – +50 °C	-10 °C – +50 °C
Dust / water protection	IP 66	IP 66
Weight (instrument only)	3.85 kg	3.85 kg

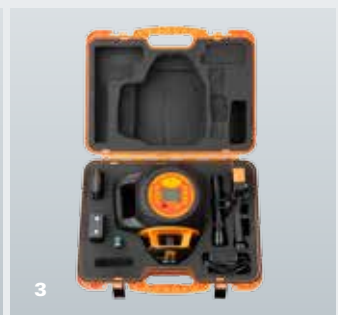
# FL 510HV-G Tracking

## The ideal outdoor laser

- » **Optimized laser for outdoor applications with automatic axis alignment in horizontal and vertical**



- 1 Receiver FR 77-MM Tracking included
- 2 Remote control range up to 100 m
- 3 Complete kit supplied in container



TECHNICAL DATA		FL 510HV-G TRACKING	FEATURES	SUPPLIED WITH
				ART.-NO. 231700
Self-levelling range		$\pm 8^\circ$	<ul style="list-style-type: none"> <li>· Dual Axis Laser</li> <li>· Horizontal and vertical</li> <li>· Digital grade adjustment</li> <li>· Monitored grade (also in tracking mode)</li> <li>· TILT function</li> <li>· VWS function</li> <li>· Tracking function horizontal and vertical</li> <li>· Zonal control</li> <li>· 90° beam to zenith</li> <li>· Illuminated display</li> <li>· 2-way RF remote control</li> <li>· Manual function</li> <li>· Operation with rechargeable Li-Ion or alkaline batteries</li> <li>· Dust / water protection IP 66</li> </ul>	<ul style="list-style-type: none"> <li>· Receiver FR 77-MM Tracking with clamps for levelling staff and scaffold</li> <li>· 2-way RF remote control</li> <li>· Li-Ion batteries and charger</li> <li>· Vertical mount</li> <li>· Telescopic viewfinder</li> <li>· 360° horizontal fine adjustment bracket</li> <li>· Container</li> </ul>
Accuracy horizontal		$\pm 0.5 \text{ mm} / 10 \text{ m}$		
Accuracy vertical		$\pm 1 \text{ mm} / 10 \text{ m}$		
Working range with receiver		400 m*		
FR 77-MM Tracking Ø				
Laser diode / Laser class		2		
Horizontal slope setting				
X axis		$\pm 10.000 \%$		
Y axis		$\pm 10.000 \%$		
X and Y axis		$\Sigma \pm 14 \%$		
Vertical slope setting				
X axis		$\pm 10.000 \%$		
Y(Z) axis		horizontal self-levelled		
Working range tracking function		90 m*		
Rotating speed		300, 600, 1100 rpm		
Operating time		40 h		
Power supply		intelligent / Li-Ion		
		Alkaline batteries (optional)		
Remote control range		100 m		<b>RECEIVER</b> <b>FR 77-MM TRACKING</b> ART.-NO. 257150 Technical data for FR 77-MM Tracking same as FR 77-MM (see page 73). Additional RF module to operate the tracking function.
Remote control channels		8		
Temperature range		$-10^\circ\text{C} - +50^\circ\text{C}$		
Dust / water protection		IP 66		
Weight (instrument only)		3.85 kg		

\* depending on environmental conditions

- » Including receiver FR 77-MM Tracking with mm-indication

» **Tracking functions:**

- The laser plane is automatically centred to the receiver "on-grade"
- Vertical: in both X and Y axis
- Horizontal: one axis X or Y, other axis horizontal self-levelled
- Indication of grade value in % after completion of tracking process shown on the instrument and remote control display. Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections – increases site safety

- Fully automatic self-levelling in horizontal, vertical and grade

· **Slope functions:**

· **Horizontal:**

- Digital grade setting of X and Y axis up to  $\pm 10\%$
- Manual slope setting of X and Y axis

· **Vertical:**

- Direction of X axis can be set up to  $\pm 10\%$  with Y axis self-levelled
- Direction of X and Z axis can be set manually

- Automatic TILT function
- VWS function (Vibration-Wind-Security)  
Rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- Zonal control with electronic beam screen (masking)
- Fully functional 8-channel 2-way RF remote control
- Li-Ion battery technology





## FL 550H-G

For steep grades



» **This dual grade laser can be used for grades up to 25 %.**

» A rugged high performance fully automatic self-levelling dual grade laser. Designed for excavation, ground works and use with machine control systems for ultimate grade control.

- »
- Horizontally fully automatic self-levelling
  - Digital grade setting of X and Y axis
  - Steep grade setting in Y axis up to 25 % (using steep grade adapter)
  - Manual grade setting of X and Y axis
  - VWS function (Vibration-Wind-Security); rotation will not be stopped due to light ground and wind vibrations (VWS function is combined with TILT function)
  - Fully functional 9-channel 2-way RF remote control
  - Li-Ion battery technology
  - Zonal control with electronic beam screen (masking)

**1** Fully functional 9-channel 2-way RF remote control

**3** Remote control range up to 100 m








**2** 360° horizontal fine adjustment bracket for optimum alignment on long distances

**4** Complete kit supplied in container



TECHNICAL DATA	FL 550H-G	FEATURES	SUPPLIED WITH
			ART.-NO. 232020
Self-levelling range	± 8°	· Dual Axis Laser	· Receiver FR 45 with clamp
Accuracy horizontal	± 0,5 mm / 10 m	· Steep grade laser	· 2-way RF remote control
Accuracy grade	± 1 mm / 10 m	· Digital grade adjustment	· Li-Ion batteries and charger
Working range with receiver Ø	900 m	· Monitored grade	· Telescopic viewfinder
Working range w/o receiver Ø	40	· TILT function	· Steep grade adapter
Laser diode / Laser class	635 nm / 2	· VWS function	· 360° horizontal fine adjustment bracket
Slope setting		· Illuminated display	· Container
X axis	± 10.000 %	· 2-way RF remote control	
Y axis	-1.000 % – +25.000 %	· Manual function	
X and Y axis	Σ ± 20 %	· Operation with rechargeable Li-Ion or alkaline batteries	
Rotating speed	600, 1100 rpm	· Dust / water protection IP 66	
Operating time	40 h		
Power supply	intelligent / Li-Ion Alkaline batteries (optional)		
Remote control range	150 m		
Remote control channels	9		
Temperature range	-10 °C – +50 °C		
Dust / water protection	IP 66		
Weight (instrument only)	3.85 kg		

# Rotating Lasers Outline

			Laser class	Horizontal levelling	Vertical levelling	Accuracy / 10 m	Dust / water protection	Working range w/o receiver Q	
271000	FL 30		2	manual	manual	± 2 mm	IP 54	30 m	120 m
212000	FL 100HA JUNIOR		2	fully automatic	–	± 1 mm	IP 65	40 m	600 m
211000	FL 110HA		2	fully automatic	–	± 0.75 mm	IP 66	40 m	800 m
291500	FL 210A		2	fully automatic	manual	H ± 1 mm	IP 66	40 m	400 m
244020	FL 240HV		2	fully automatic	fully automatic	± 1 mm	IP 54	40 m	500 m
244000	FL 240HV		3R	fully automatic	fully automatic	± 1 mm	IP 54	60 m	700 m
244500	FLG 240HV-GREEN		2	fully automatic	fully automatic	± 1 mm	IP 54	60 m	400 m
242020	FL 260VA		2	fully automatic	fully automatic	H ± 0.5 mm	IP 66	40 m	800 m
242700	FL 270VA-TRACKING		2	fully automatic	fully automatic	H ± 0.5 mm	IP 66	40 m	400 m
242000	FL 260VA		3R	fully automatic	fully automatic	H ± 0.5 mm	IP 66	60 m	1000 m
242500	FLG 260VA-GREEN		2	fully automatic	fully automatic	H ± 0.5 mm	IP 66	60 m	600 m
231020	FL 500HV-G		2	fully automatic	fully automatic	H ± 0.5 mm	IP 66	40 m	900 m
231000	FL 500HV-G		3R	fully automatic	fully automatic	H ± 0.5 mm	IP 66	60 m	1200 m
231700	FL 510HV-G TRACKING		2	fully automatic	fully automatic	H ± 0.5 mm	IP 66	60 m	400 m
232020	FL 550H-G		2	fully automatic	–	± 0.5 mm	IP 66	40 m	900 m
582020	FL 1000 HP		2	fully automatic	–	± 1 mm	IP 54	40 m	400 m



Working range with receiver Ø	Working range scanning (radius, w/o receiver)	rpm	Tracking function	TILT function	VWS function	Slope function of both axis X and Y	Slope setting	Plumb up / down beam	Power supply	Receiver, remote control, rechargeable battery, charger	PAGES
20 m	150 – 300	–	–	–	–	–	yes	Alkaline	optional/-/-		44
–	600	–	yes	yes	–	–	–	NiMH	inclusive		45
–	800	–	yes	yes	± 5° (9 %)	manual	–	Li-Ion	inclusive		46
30 m	150 – 300	–	–	–	–	–	yes	NiMH	inclusive		47
40 m	200 / 500	–	yes	–	± 5° (9 %)	manual	yes	NiMH	inclusive		48
60 m	200 / 500	–	yes	–	± 5° (9 %)	manual	yes	NiMH	inclusive		48
40 m	200 / 500	–	yes	–	± 5° (9 %)	manual	yes	NiMH	inclusive		49
40 m	300 / 800	–	yes	yes	± 5° (9 %)	manual	yes	Li-Ion	inclusive		50
40 m	300 / 800	yes	yes	yes	± 5° (9 %)	manual	yes	Li-Ion	inclusive		52
60 m	300 / 800	–	yes	yes	± 5° (9 %)	manual	yes	Li-Ion	inclusive		50
40 m	300 / 800	–	yes	yes	± 5° (9 %)	manual	yes	Li-Ion	inclusive		51
40 m	300 / 600 / 1100	–	yes	yes	± 10 %	digital	yes	Li-Ion	inclusive		54
60 m	300 / 600 / 1100	–	yes	yes	± 10 %	digital	yes	Li-Ion	inclusive		54
40 m	300 / 600 / 1100	yes	yes	yes	± 10 %	digital	yes	Li-Ion	inclusive		56
–	600 / 1100	–	yes	yes	X ± 10 % Y -1 % – +25 %	digital	–	Li-Ion	inclusive		58
30 m	200 / 500	–	yes	–	± 5° (9 %)	manual	yes	NiMH	inclusive		25

# FKL-50 und FKL-50 Green

## The standard for construction

» Self-levelling pipe laser. A rugged waterproof construction for long lasting performance and reliability in the toughest conditions.

» Also with green Laser diode for best visibility. To the human eye a green laser dot is many times more visible than a red dot. This improved visibility associated with a small beam diameter ensures high work efficiency.



### SUPPLIED WITH

#### Fittings

- 1 Target frame with target DN 150–300
- 2 Container
- 3 Pipe Laser
- 4 IR remote control
- 5 Leg set DN 500
- 6 Leg set DN 400
- 7 Leg set DN 300
- 8 Leg set DN 250
- 9 Leg set DN 200
- 10 Adapter for 3-leg set up
- 11 Charger
- 12 Battery case for alkaline batteries
- 13 Target DN 400–500

Application in pipes DN 150 w/o legs



TECHNICAL DATA	FKL-50	FKL-50 GREEN	FEATURES
Laser class / diode power	3R / < 2 mW	3R / 2–3 mW	<ul style="list-style-type: none"> <li>Robust aluminium housing</li> <li>Easy intuitive operation</li> <li>Fully automatic self-levelling</li> <li>Automatic beam centring</li> <li>Laser start point indication</li> <li>Clear easy to read illuminated LCD</li> <li>Integrated rechargeable batteries</li> <li>IR remote control</li> </ul>
Laser wave length	red / 635 nm	green / 522 nm	
Beam diameter	12 mm	8 mm	
Working range	up to 200 m	up to 200 m	
Grade range	-20 % – +40 %	-20 % – +40 %	
Self-levelling range	± 5°	± 5°	
Minimum display reading	0.00 %	0.001 %	
Horizontal accuracy	± 5 mm / 100 m	± 5 mm / 100 m	
Left / right scanning	± 4°	± 4°	
Operating time	24 h (NiMH)	24 h (NiMH)	
Temperature range	-20 °C – +50 °C	0 °C – +40 °C	
Power supply	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)	
Remote control range			
front / back	60 m / 10 m	60 m / 10 m	<b>SUPPLIED WITH (TOP LEFT)</b> <b>FKL-50</b> <b>ART-NO. 455000</b>
Dust / water protection	IP 68	IP 68	
Dimensions	Ø 132 mm, length 380 mm	Ø 132 mm, length 380 mm	<b>SUPPLIED WITH (TOP RIGHT)</b> <b>FKL-50 GREEN</b> <b>ART-NO. 456000</b>
Weight (laser only)	5 kg	5 kg	
Weight set	11 kg	11 kg	





## geo-FENNEL knowledge base – useful information about laser measuring technology

- » As specialists in the field of laser measuring equipment we would like our customers to benefit from our many years of experience, providing you with useful explanations relating to various topics in the field of laser technology. This will make using our instruments easier, safer and a more profitable experience.

### IP Protection class according to DIN EN 60529

- » The degree of protection of an instrument's housing is defined by the indicator "IP" (Ingress Protection) followed by a two-digit code.

- First digit: Protection against solid particles
- Second digit: Protection against water



FIRST DIGIT – PROTECTION AGAINST SOLID PARTICLES	SECOND DIGIT – PROTECTION AGAINST WATER
0 No protection	0 No protection
1 Protected against solid particles with a diameter greater than 50 mm	1 Protected against dripping water
2 Protected against solid particles with diameter greater than 12 mm	2 Protected against dripping water, when the housing is tilted at an angle of up to 15°
3 Protected against solid particles with diameter greater than 2.5 mm	3 Protected against sprayed water up to an angle of 60°
4 Protected against solid particles with diameter greater than 1 mm	4 Protected against splashed water from any direction
5 Protected against dust that would interfere with the operation of the equipment	5 Protected against water projected from a nozzle
6 Dust tight	6 Protected against water projected from powerful jets from any direction
	7 Protected against temporary immersion
	8 Protected against permanent submersion in water

## geo-FENNEL F6 Two-way Radio

- » The F6 is a PMR 446 channel (Private Mobile Radio) licence free Two-way Radio and works between the frequency band 446–446.1 MHz.  
The PMR (Private Mobile Radio) 446 service has been introduced following the adoption by the CEPT/ERC1 of the Decisions ERC/DEC/(98) 25, 26 and 27.
- » This type of radio can be used by anyone anywhere in the EU registration area totally fee free.  
They can have a maximum RF Output power of 500 mW and have an approx. maximum range of 5 km.

**SET ASIDE THE BAND 446.0 - 446.1 MHZ FOR A PMR 446 SERVICE,  
WITH A CHANNEL PLAN BASED ON 12,5 KHZ SPACING:**

Channel 1 = 446,00625 MHz  
Channel 2 = 446,01875 MHz  
Channel 3 = 446,03125 MHz  
Channel 4 = 446,04375 MHz

Channel 5 = 446,05625 MHz  
Channel 6 = 446,06875 MHz  
Channel 7 = 446,08125 MHz  
Channel 8 = 446,09375 MHz

## geo-FENNEL – Product functions

» geo-FENNEL lasers have many features which help to carry out safe and comfortable work on construction sites. Some of these features are explained below.



### » Automatic TILT Function

This is a measurement safety function. If the level of the instrument is disturbed it will re-level itself (within the self-levelling range of 5°). If the level is disturbed at a large range (for example if a tripod leg has moved) a height offset can be caused. This will be avoided by the TILT function. The instrument will shut off even within the self-levelling range. This function is activated automatically after the self-levelling procedure is completed.



### » Vibration-Wind-Security (VWS)

This is also a measurement safety function. It allows continuous operation during periods of vibration and wind. If a significant movement occurs the laser stops rotating and the laser beam is flashing. The VWS-Mode is combined with the automatic TILT Function.



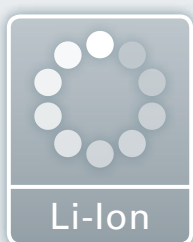
### » Remote control function

The remote control function can be switched off to avoid interference from other instruments that are being used on the same construction site.



### » Zonal control

Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections. Furthermore it greatly increases site safety.



### » Li-Ion battery technology

This technology has great advantages when compared against alkaline and NiMH rechargeable batteries:

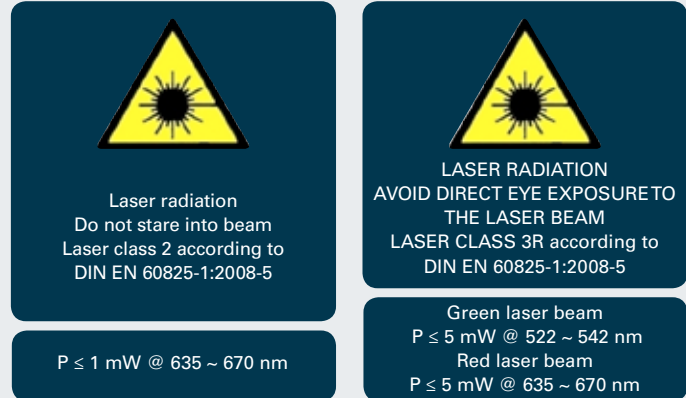
- 100 % power until fully discharged
- Top-up charging possible as no memory effect will occur
- Low self discharge then not in use

## Laser classification according to DIN EN 60825-1:2008-5 (60825-1:2014 from autumn 2014 on)

- » geo-FENNEL laser products are classified into either laser class 2 or 3R.

Their laser class is specified in our technical data.

Please refer to the latest version.



### » Instruments with laser class 2

The laser product can be used without further safety precautions (the relevant safety instructions are described in our user manuals). The eye is protected by the normal human aversion response and the blinking reflex of the human eye to a bright radiant source.

#### GEO-FENNEL CROSS LINE LASERS

##### The complete range is classified in laser class 2 and offered in 4 visibility classes:

Standard	e. g. FL 40-Pocket II	Working range visibility 10 m
HP (High Power)	e. g. FL 40-Pocket II HP	Working range visibility 20 m
SP (Selection PRO)	e. g. FL 40-PowerCross SP	Working range visibility 30 m
SP (Selection PRO) – Green	e. g. FLG 55-Green SP	Working range visibility 40 m

#### GEO-FENNEL ROTATING LASERS

Our complete range is available within the laser class 2 classification.

#### GEO-FENNEL PIPE LASERS

The FKL 80 Pipe Laser is classified in laser class 2.

### » Instruments with laser class 3R

The legal requirement for using laser class 3R products varies from country to country. The user is responsible for compliance to the national standards and regulations. The use of laser class 3R products may require registration with a local authority and the appointment of a health and safety operative.

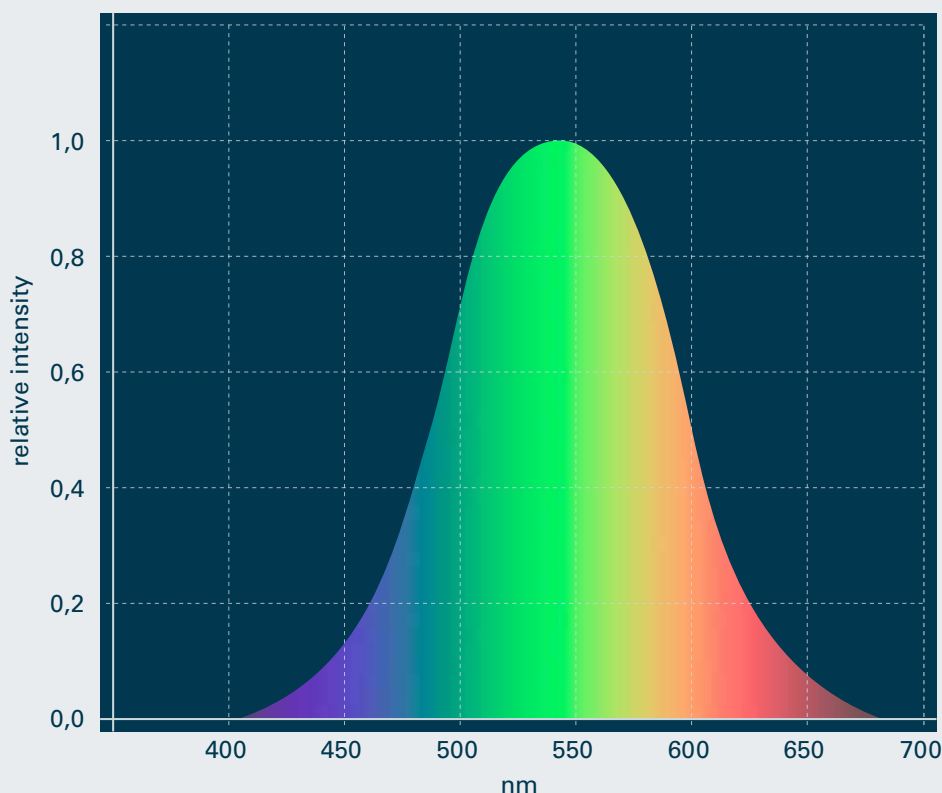
Special protection measures may be necessary as laser class 3R products have a higher laser output power. The positive effect of this is to increase the performance of the products for long range reception with receivers and improved visibility when using without a receiver.

geo-FENNEL offers various rotating and pipe lasers with laser class 3R.



## Lasers with red or green laser diode

- » The human eye can see the different wavelengths (measuring unit 'nm') of the visible colour spectrum in different intensities. The optimum is at 555 nm. Green light is situated in the middle of this range and can be perceived much higher compared to red light.



- » Therefore green lasers have benefits when used without a receiver.  
The visibility is much better when working in a bright environment, over long distances or on dark surfaces.

Previously the disadvantages of green lasers were a limited temperature range, shorter battery life, the laser class classification, as well as the significantly higher price.

geo-FENNEL have now introduced an innovation in the field of rotating lasers:

The rotating lasers FLG 240HV-Green and FLG 260VA-Green are equipped with advanced laser diode technology offering the following advantages:

- Fully usable temperature range of -20 °C to +50 °C (the same as red laser diode)
- Classification in laser class 2 due to special control electronics
- Equal or slightly better visibility compared to the previous laser class 3R version.  
Due to the laser class 2 classification the laser can be used without any regulatory complications on all construction sites.

OVERCOME DISTANCES:

# WITHOUT LOSING THE DETAIL.

To quickly and easily implement the widest variety of measuring tasks, it is sometimes vital to have the appropriate solution available. Whether you are looking for laser intensive glasses, magnetic targets or the correct adapter – the versatile accessory range from geo-FENNEL makes your work noticeably more efficient.







## Laser EasyFix 5 m Telescopic Rule



### LASER EASYFIX 5 M

ART.-NO. 452

- Telescopic rule with incorporated measuring tape
- Each section can be clamped
- Universal adapter for laser receiver. Receiver can be fixed with on-level mark on top of the rule. The height of the receiver (on-level mark) can be easily read at measuring display
- Maximum length 500 cm
- Retracted length 121.5 cm
- Incorporated circular bubble
- Weight 2.7 kg
- Incl. case

## Floor-to-Ceiling Pillar KS 3



### FLOOR-TO-CEILING PILLAR KS 3

ART.-NO. 520100

- Floor-to-ceiling pillar (1-leg tripod) to be fixed between floor and ceiling
- Solid construction
- 5 sections with metal thread
- Maximal length 3.40 m
- 5/8" and 1/4" adapter
- Supplied with carrying bag
- The individual poles are equipped with 5/8" threads. This enables them to be screwed onto tripods, if no ceiling surface is available

## 360° Fine adjustment bracket Just set



- » Allows a smooth 360° rotation and fine adjustment for rotating and line lasers. Final position can be clamped. Aperture for instruments with plumb down beam.

### UNIVERSAL MOUNT

ART.-NO. 290760

- 5/8" threads (bottom female, top male)

## WH 1 / WH 2 Wall and Ceiling Mount

- » Reinforced version with large metal platform suitable for all geo-FENNEL lasers.



1 example of use

### WH 1

ART.-NO. 290600

- Robust mount for use on walls and ceilings
- Ideal for use indoors e. g. setting out suspended ceilings
- cm / inch graduation
- Precise adjustment / alignment with large slow motion wheel
- Incl. bag

### WH 2

ART.-NO. 290610

- Same as WH 1 but all metal.
- Especially solid
- Platform size 150 x 95 mm for fixing larger instruments
- Suitable for all geo-FENNEL-lasers



1

## Adapter 5814



### ADAPTER 5814

ART.-NO. 290550

- Adapter 5/8" to 1/4"
- Converts a standard 5/8" tripod into a 1/4" fitting

## Grade Mount



### GRADE MOUNT

ART.-NO. 290700

- For rotating and line lasers with manual function
- For setting slopes between 0° and 90° for laser levels in manual mode
- Robust construction
- Graduated slow motion screw
- Fits any tripod with 5/8" thread
- With bubble

## Scaffold Clamp Holder



### SCAFFOLD CLAMP HOLDER

ART.-NO. 320600

- For quick centring over the linchpin
- To connect with rotating laser levels, automatic levels, theodolites
- Span approx. 60 mm
- Weight 1,5 kg

## Adapter for S-Digit mini +



- » Adapter for connecting S-Digit mini + (see page 106) to the Grade Mount. Allows higher accuracy to be achieved.

### ADAPTER FOR S-DIGIT MINI +

ART.-NO. 290750



1 Example of use

## Laser Intensive Glasses



### LASER GLASSES RED

ART.-NO. 253000



### LASER GLASSES GREEN

ART.-NO. 253001

- Laser intensive glasses for better visibility of laser beam

## Magnetic Target LS 307



### TARGET RED

### TARGET GREEN

ART.-NO. 290501

- Magnetic target with cm / inch graduation

## FR 55 Receiver for Line Lasers

- » Height indication by LEDs and LCD.



### FR 55

ART.-NO. 500510

- Height indication by 3 LEDs which are situated on the front side and top and with a large display on the front
- With clamp
- Shut-off tone
- Automatic shut-off
- Built-in vials

## FR 55-M Receiver for Line Lasers

- » Height indication by LEDs.



### FR 55-M

ART.-NO. 500520

- Height indication by 3 LEDs which are situated on the front, side and back
- With clamp
- Shut-off tone
- 2-step accuracy
- Automatic shut-off
- Supplied in case
- Built-in magnet on top

## FR 45 and FRG 45-Green Receiver for Rotating Lasers

- » With dual display and clamp for levelling staff, shut-off tone, automatic shut-off, illumination, built-in magnetic strips and vial. Rubberized housing for effective site protection.



- » FR 45 for rotating lasers with read beam



- » FRG 45-Green for rotating lasers with green beam

TECHNICAL DATA	FR 45	FRG 45-GREEN
	ART.-NO. 252000	ART.-NO. 252300
Suitable for laser diode	red	green
Indication	2 x LCD	2 x LCD
3-step accuracy	± 10 mm, ± 4 mm, ± 2 mm	± 10 mm, ± 4 mm, ± 2 mm
Power supply	1 x 9 V	1 x 9 V
Signal tones	3	3
Tone can be switched off	yes	yes
Automatic shut-off	yes	yes
Illumination	yes	yes
Weight	0.2 kg	0.2 kg
Dust / water protection	IP 66	IP 66



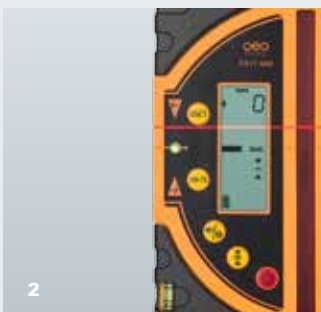
# FR 77-MM Laser Receiver



» With digital level indication in millimeters.

- Extra long receiving window
- mm-Indication of difference between laserplane and "0" level
- "0" position can be defined (Offset)

- 1 Illuminated display
- 2 Detail Offset
- 3 Special mount for divers connection e. g. at the scaffold



TECHNICAL DATA	FR 77-MM	FEATURES	SUPPLIED WITH
3-step accuracy	± 2 / 5 / 9 mm	<ul style="list-style-type: none"> <li>· For rotating lasers using a red laser beam</li> <li>· Extra-long receiving window</li> <li>· mm-Indication of difference between laserplane and "0" level</li> <li>· Segments of display indication increase / decrease proportionally</li> <li>· "0"-Position can be defined (Offset)</li> <li>· Display illumination</li> <li>· Robust clamp</li> <li>· Special mount for divers connection e. g. at the scaffold</li> </ul>	<b>ART.-NO. 257100</b> <ul style="list-style-type: none"> <li>· 4 x AA Alkaline</li> <li>· Clamp</li> <li>· Bracket</li> </ul>
Accuracy mm-indication	± 1 mm		
Working range class 2-Laser	150 m		
Working range class 3R-Laser	350 m		
Length receiving window	125 mm		
Length receiving area mm-indication	100 mm		
Offset range (OSET) from base line	± 20 mm		
Measuring units	mm, cm, in, fraction of in		
Signal tones	3		
Display indication	front, back		
LED indication	front, side, back		
Power supply / Operating time	Alkaline / 110 h		
Temperature range	-10°C to +50°C		
Display illumination	yes		
Magnets	top, side		
Vials	top, side		
Dust / water protection	IP 67		
Dimensions	170 x 77 x 32 mm		
Weight	0,5 kg		



## FR 66-MM

### Receiver for Rotating Lasers

» With digital level indication in millimeters.

TECHNICAL DATA	FR 66-MM	FEATURES
	ART-NO. 258000	
Indication	2 x LCD – 3 x LED on front	· Difference between laser plane and "0" level is shown on the display in mm
5-step accuracy	0.5 / 1 / 2 / 5 / 10 mm	· Segments of display indication increase / decrease proportionally
Measuring units	mm, cm, ft, inch	· Extremely robust and shock-proof
Power supply	2 x AA Alkaline	· Large receiving window (12 cm)
Operating time	60+ h	· 5-step accuracy from 0.5 to 10 mm
Signal tones	3 (65, 95, 100 dBA)	· Two "0" positions can be set (automatic recognition through re-set of receiver clamp)
Tone can be switched off	yes	· HOLD function – reading on display can be held
Automatic shut-off	yes (30 min. 24 h)	· Dust / water protection IP 67
Weight	0.54 kg	

## FMR 600

### Receiver for Rotating Lasers



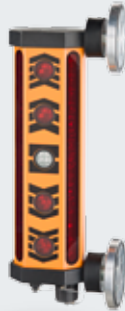
» Heavy duty laser receiver, ideal for mounting onto construction machines. Strong built-in magnets for connection to machines and a clamp for levelling staffs. Large receiving window (125 mm) and clear height indication (audible and visible). Ideal for use with smaller excavators.

TECHNICAL DATA	FMR 600	SUPPLIED WITH FMR 600
		ART-NO. 265000
Accuracy fine	± 5 mm	· Batteries
Accuracy coarse	± 12,5 mm	· Container
Working range	200 m	· Clamp for levelling staff
Receiving window	125 mm long	· Attachment to levelling staff by use of clamp or directly to the machine with built-in magnets
Reception angle	240°	· LCD, LEDs and 3 different tones indicate heights
Power supply	4 x AA Alkaline	· Memory function of last received data
Operating time	50 h	· Water / dust resistant
Temperature range	-20 °C – +50 °C	
Dimensions	170 x 100 x 42 mm	
Dust / water protection	IP 66	
Weight	0.96 kg	

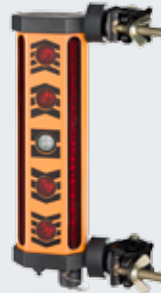
# FMR 700-M/C

## Machine Control Receiver Set

» A machine control receiver to improve the operating accuracy of your construction machinery. Used for permanent level control the FMR 700 receiver has a 360° reception range.



» Magnet



» Clamp



» FRP 707

TECHNICAL DATA	FMR 700-M/C AND 706-M/C	FEATURES	SUPPLIED WITH
Accuracy fine	± 2 mm – ± 10 mm	<ul style="list-style-type: none"> <li>Length of receiving window: 25 cm</li> <li>Connect to the machine with screw clamps or with strong magnets (both supplied in the kit)</li> <li>Detects beam from rotating laser levels of any brand</li> <li>Remote display</li> </ul>	<p>Machine control receiver, built-in rechargeable battery, charger, 12/24V-battery cable, remote display with connection cable, hard case</p> <p>Also supplied separately:</p> <ul style="list-style-type: none"> <li>Machine control receiver FMR 706-M/C, built-in battery, charger, 12/24V-battery cable, hard case</li> <li>Remote display with connection cable</li> </ul>
Accuracy coarse	± 5 mm – ± 23 mm		
Rechargeable batteries	7.2 V NiMH		
	2500 mAh		
Operating time	40 h		
Charging time	15 h		
Dust / water protection	IP 66		
Temperature range	-20 °C – +50 °C		
Dimensions	376 x 180 x 49 mm		
Weight	3.1 kg		
ART.-NO. SET FMR 700-M/C (MAGNET AND CLAMP)		260500	
ART.-NO. FMR 706-M/C (MAGNET AND CLAMP)		260550	
ART.-NO. FRP 707		263000	

## Magnetic Support for Machine Control Receiver

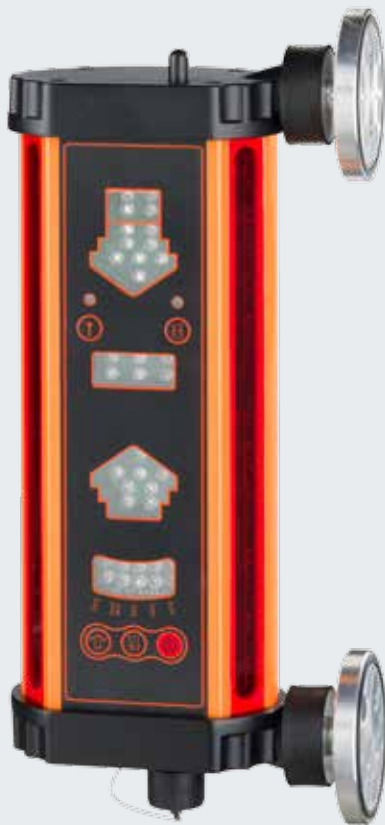


» For connection to construction machinery. Allows the receiver to be easily aligned to the laser plane. Strong magnets ensure non-slip grip onto the machine. Quick release lever allows the magnetic support to be detached easily. Suitable for all brands of machine receivers using a clamp fixing system.

MAGNETIC SUPPORT  
FOR MACHINE CONTROL RECEIVER

ART.-NO. 290810





## FMR 800-M/C SET Machine Control Receiver

» **Machine control receiver used with construction machinery to increase accuracy and boost productivity. For continuous tilt and height control.**

- Bulldozer: Blade tilt and height control
- Excavator: Bucket tilt and height control
- RF Communication link to the remote display



1 Clamp

TECHNICAL DATA		FMR 800-M/C	MACHINE CONNECTION	FEATURES
Beam Reception angle	360°		<ul style="list-style-type: none"><li>· Magnetic connection directly to the machine</li><li>· Clamp connection to the machine mast</li><li>· Mast diameter 40–50 mm</li></ul>	<ul style="list-style-type: none"><li>· Length of receiving window 27 cm</li><li>· Will detect the beam from any brand of rotating laser (red)</li><li>· Dust / water protected metal housing</li><li>· Wireless remote display with suction pad and integrated magnets</li></ul>
Detectable rotating laser speeds rpm	300 - 1200			
Working range class 2-Laser	250 m			
Working range class 3R-Laser	350 m			
Battery recharging time	4 -5h			
Automatic Power-off, after	60 min.			
Dust / water protection	IP 66			
Operating temperature	-10°C - +50°C			
Dimensions	370 x 132 x 92mm			
Weight (receiver only)	3,95 kg			
BULLDOZER MODE		EXCAVATOR MODE		
<b>Blade tilt</b>		<b>Bucket tilt</b>		
(Receiver movement left / right tilted)		(Receiver movement in longitudinal direction forward / backward tilted)		
Accuracy	fine / standard / coarse	Accuracy	fine / standard / coarse	
	± 0.5° / ± 1.5° / ± 2.5°		± 0.5° / ± 1.5° / ± 2.5°	
Indication LED (left / right sideways)	5	Indication LED, grouped	3	
		3 signals: rapid/slow flashing, permanent light		
<b>Height indication</b>		<b>Height indication</b>		
(Receiver movement up / down)		(Receiver movement up / down)		
Accuracy	fine / standard / coarse	Accuracy	fine / standard / coarse	
	± 2 / ± 5 / ± 15 mm		± 2 / ± 5 / ± 15 mm	
Indication LED (up / down)	3	Indication LED, (up / down) grouped	4	
		Extended upper LED for bucket dipping motion		

# FRD 807 Remote Display



1 Suction pad attachment

TECHNICAL DATA	FRD 807	SUPPLIED WITH REMOTE DISPLAY FRD 807
		ART.-NO. 264540
Wireless (RF) communication range	10 m	· Remote display FRD 807 · Suction pad · Batteries
Communication channels	3	
Machine connection:	· integrated magnetic pads · strong suction pad for cabin windscreen	
Power supply	6 x AA alkaline	
Dimensions	170 x 100 x 42 mm	
Weight	1.1 kg	

SUPPLIED WITH  
FMR 800-M/C SET

ART.-NO. 264550

- SET Machine receiver FMR 800-M/C with built-in rechargeable battery
- Charger
- Remote display FRD 807 with suction pad and batteries
- Hard carrying case

SUPPLIED WITH  
FMR 800-M/C

ART.-NO. 264500

- Machine receiver FRM 800-M/C with built-in rechargeable battery
- Charger
- Hard carrying case

OPTIONAL  
MAGNETIC SUPPORT

ART.-NO. 290810

- For connecting receiver to excavator bucket
- To be used with FMR 800 fitted with clamps





AT OUR CORE:

# PRECISION AND INNOVATION.

Decades of experience – an important factor in the quality of our instruments. You can depend on geo-FENNEL surveying instruments to provide precise reliable results under all working conditions. Whether electronic or optical – our construction and engineering instruments are characterized by their intuitive ease of use, innovation and high accuracy.







## FN 24 / FN 32 Automatic Level



- » Practical high performance combined with a modern design – the new auto levels FN 24 and FN 32.

Automatic Levels suitable for all construction sites for levelling and alignment.

TECHNICAL DATA	FN 24	FN 32	FEATURES
ART.-NO. 400 GON	220424	220432	
Mean error for 1 km double levelling	± 2 mm	± 1 mm	<ul style="list-style-type: none"> <li>· Metal housing</li> <li>· Bubble reading mirror</li> <li>· Target device (Optical sight) for quick alignment to a target or levelling staff</li> <li>· Modern design</li> <li>· Dust / water protection IP 54</li> </ul>
Telescope magnification	24 x	32 x	
Objective diameter	35 mm	35 mm	
Shortest focusing distance	0.3 m	0.3 m	
Working range of compensator	± 12'	± 12'	
Levelling accuracy	± 0,5"	± 0,5"	
Circular bubble	8' / 2 mm	8' / 2 mm	
Horizontal circle	400 gon / 360°	400 gon / 360°	
Dust / water protection	IP 54	IP 54	
Weight (instrument only)	1.2 kg	1.2 kg	



## FAL Automatic Level

- » Rugged design for site use. Precision optics in a metal housing and a large range to suit all applications. Also available as set with tripod and levelling staff.

TECHNICAL DATA	FAL 20	FAL 24	FAL 28	FAL 32	FEATURES
ART.-NO. 400 GON	230400	234400	238400	232400	<ul style="list-style-type: none"> <li>· Metal housing</li> <li>· Mirror for easy reading of bubble</li> <li>· Suitable for both flat and domed head tripods</li> </ul>
ART.-NO. 360°	230360	234360	238360	232360	
Mean error for 1 km double levelling	2.5 mm	2.0 mm	1.5 mm	1.0 mm	
Telescope magnification	20 x	24 x	28 x	32 x	
Objective diameter	38 mm	38 mm	38 mm	38 mm	
Shortest focusing distance	0.3 m	0.3 m	0.3 m	0.3 m	
Working range of compensator	± 15'	± 15'	± 15'	± 15'	
Levelling accuracy	± 0.5"	± 0.5"	± 0.5"	± 0.5"	
Circular bubble	8' / 2 mm	8' / 2 mm	8' / 2 mm	8' / 2 mm	
Horizontal circle	400 gon / 360°	400 gon / 360°	400 gon / 360°	400 gon / 360°	
Dust / water protection	IP 54	IP 54	IP 54	IP 54	
Weight	1.5 kg	1.5 kg	1.5 kg	1.5 kg	



## FLP 100 Laser Zenith Plummets

- » A precise laser plummet incorporating a coaxial telescope for both laser and optical observations.

TECHNICAL DATA	FLP 100	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 310000</b>
Magnification	26 x	<ul style="list-style-type: none"> <li>· Easy to use with two laser plummets (up and down)</li> <li>· Laser dot visible up to <math>\geq 120</math> m</li> <li>· High accuracy for precision work</li> </ul>	<ul style="list-style-type: none"> <li>· Set of alkaline batteries</li> <li>· Target plate</li> <li>· Container</li> </ul>
Clear objective aperture	36 mm		
Shortest focusing distance	0.4 m		
<b>Laser Pointer</b>			
Laser class / Wave length	2M / 635 nm		
Spot size Ø	3 mm / 80 m		
Max. visible distance (day)	$\geq 120$ m		
Max. visible distance (night)	$\geq 250$ m		
Deviation to optical axis	$\leq 3''$		
Accuracy	$\pm 2,5$ mm / 100 m		
<b>Optical plummet</b>			
Laser class / Wave length	1 / 650 nm		
Accuracy	$\pm 1$ mm / 1,5 m		
Plate level	20" / 2 mm		
Power supply	2 x AA Alkaline		
Temperature range	-10 °C – +50 °C		
Dust / water protection	IP 54		
Weight	2.8 kg		

## FEN 132 Engineers' Automatic Level



- » A high quality engineers' automatic level with the most robust compensator available on the market. Brilliant optical system for clear view at all conditions.

- 1 By mirroring an index mark into the eyepiece (swing position of the compensator) measurements can be carried out with high accuracy
- 2 Extremely robust compensator

TECHNICAL DATA	FEN 132	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 210233</b>
Magnification	32 x	<ul style="list-style-type: none"> <li>· Robust and temperature insensitive</li> <li>· Highly accurate and free moving vertical axis</li> <li>· Separate horizontal clamp</li> <li>· Accurate tangent screw movement and focusing drive without backlash</li> <li>· Optical sighting device</li> <li>· Excellent image quality</li> <li>· Service-friendly due to simple construction</li> </ul>	<ul style="list-style-type: none"> <li>· Container</li> <li>· Adjustment pin</li> <li>· Screw driver</li> <li>· Dust brush</li> <li>· Plumb bob</li> </ul>
Clear objective aperture	45 mm		
Field of view	1°		
Shortest focusing distance	2 m		
Mean error per 1 km double levelling using index mark	$< 1$ mm		
Without using index mark	$\pm 2$ mm		
Multiplication constant	100		
Working range of compensator	$\pm 15'$		
Levelling accuracy compensator	2"		
Circular bubble	8' / 2 mm		
Horizontal circle	360°		
Dust / water protection	IP 54		
Weight	3.4 kg		
Dimensions	280 x 160 x 140 mm		
Temperature range	-25 °C – +50 °C		



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# FET 200

## Engineers'/ Construction Theodolite

» High accuracy and clear scale reading.  
Robust and easy to use.



» FET 200

FET 500

- Built-in optical plummet
- Circular bubble, plate level
- Telescope vial
- Circle orientation device
- Available in 400 gon or 360°

FET 200

- Clear and easy scale reading
- Circular bubble, plate level
- Circle orientation device
- Built-in optical plummet
- Available in 400 gon or 360°



## FET 402K-L With Two-Axis Compensator and Laser Pointer

» Coaxial, focusable laser beam integrated to the telescope.

## FET 405K / FET 420K With Two-Axis Compensator



» FET 402K-L



» FET 405K and FET 420K

TECHNICAL DATA	FET 402K-L	FET 405K	FET 420K	OPTIONAL 90° EYEPiece
ART.-NO.	316000	315000	314000	ART.-NO. 314500
Magnification	30 x	30 x	30 x	<b>FEATURES</b> <ul style="list-style-type: none"> <li>· 2 large easy-to-read LCDs</li> <li>· Simultaneous reading of horizontal and vertical circle</li> <li>· Illumination of display and field of view</li> <li>· Clockwise / anti-clockwise horizontal angle reading</li> <li>· "0" set or hold of horizontal circle at any desired position</li> <li>· "V" circle reading in gon / degrees or % of slope</li> </ul>
Clear objective aperture	45 mm	45 mm	45 mm	
Shortest focusing distance	1.4 m	1.4 m	1.4 m	
Angle measurement	incremental	incremental	incremental	
Accuracy	0.6 mgon (2")	2 mgon (10")	4 mgon (20")	
Minimum reading	0.2 mgon (1")	1 mgon (5")	2 mgon (10")	
Compensator	Dual axis	Dual axis	Dual axis	
Measuring units	400 gon / 360° / mil	400 gon / 360° / mil	400 gon / 360° / mil	
Target	focusable	–	–	
Laser class	3R	–	–	
Beam diameter	5 mm / 100 m	–	–	
Maximum visibility	180 m	–	–	
Deviation	5"	–	–	
Optical plummet	3 x	3 x	3 x	
Focusing range	0.5 – ∞	0.5 – ∞	0.5 – ∞	
Plate level	30" / 2 mm	30" / 2 mm	30" / 2 mm	
Circular level	8' / 2 mm	8' / 2 mm	8' / 2 mm	
Operating time / Power supply	35 h NiMH / 40 h Alkaline	35 h NiMH / 40 h Alkaline	35 h NiMH / 40 h Alkaline	
Theodolite and laser	24 h NiMH / 30 h Alkaline	–	–	
Temperature range	-20 °C – +45 °C	-20 °C – +50 °C	-20 °C – +50 °C	
Dust / water protection	IP 54	IP 54	IP 54	
Tribrach	detachable	detachable	detachable	
Weight	4.5 kg	4 kg	4 kg	

# TheoDist® FTD 05 / FTD 02

## Reflectorless Total stations



» FTD 05



» FTD 02

» The geo-FENNEL TheoDist® is designed to be user-friendly and quick to set up on any construction site. Easy to handle, robust, exact and reliable.

» The main features of the geo-FENNEL TheoDist® are:

- Measuring programs that provide efficient and easy solution for setting out
- Three-dimensional measurement of coordinates
- Menu driven software with intuitive structure to maximise productivity
- A visible laser pointer to improve targeting accuracy and allowing measurements to be taken without looking through the telescope
- Data can be uploaded and downloaded to a PC via the RS-232 connection or SD-Card (FTD 02)
- Measuring range of up to 300m (FTD 05: 200m) without reflector
- Quick and easy set-up with the integrated laser plummet

» The geo-FENNEL TheoDist® Series is equipped with a variety of programs from simple distance and angle measurement up to precise three-dimensional setting out.

- Missing Line
- Offset
- Remote elevation measurement
- Resection
- Integrated application programs for setting out office generated designs.
- Area

» The communication software supplied with the geo-FENNEL TheoDist® allows the user to save the data in various formats. The data files can be converted into DXF format making them suitable to be uploaded into CAD Software such as AutoCAD®.



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TECHNICAL DATA	FTD 05	FTD 02
	ART-NO. 700000	ART-NO. 700200
<b>Telescope</b>		
Image	Erect	Erect
Objective aperture	45 mm	45 mm
Magnification	30 x	30 x
Field of view	1° 30'	1° 30'
Resolving power	4"	4"
Shortest focus distance	1.5 m	1.5 m
<b>Distance measurement</b>		
Reflectorless	200 m	300 m
Reflective tape target	600 m	600 m
Single standard Prism	600 m	5.000 m
Accuracy	3 mm + 2 ppm	2 mm + 2 ppm
Offset	"0"	variable
<b>Measuring time</b>		
Fine / Rapid / Tracking	1.5 s / 0.9 s / 0.3 s	1.8 s / 0.9 s / 0.3 s
Minimum reading	1 mm	1 mm
Distance units	m / ft	m / ft
<b>Angle measurement</b>		
Minimum reading resolution	1" / 5" / 10"	1" / 5" / 10"
Angle accuracy	5"	2"
Angle units	100 % / 360° / 400 gon	100 % / 360° / 400 gon
<b>Compensator</b>		
Type	electronic	electronic
Range	± 3°	± 3°
<b>Laser pointer</b>		
Laser classification	3R	3R
<b>Laser plummet</b>		
Accuracy	± 1 mm / 1,5 m	± 1 mm / 1,5 m
Laser classification	2	2
<b>Display</b>		
Dual LCD	4 Lines, 24 Characters	8 Lines, 18 Characters
<b>Power</b>		
Rechargeable battery type	7.2 V DC NiMH	7.2 V DC NiMH
Operating time	5 h	5 h
Charger	100 / 240 V	100 / 240 V
<b>Vial sensitivity</b>		
Plate level vial	30" / 2 mm	30" / 2 mm
Circular vial	8' / 2 mm	8' / 2 mm
<b>General specs</b>		
Internal memory	50.000 Points	50.000 Points
External memory	-/-	SD-Card
Weight	6.0 kg	6.5 kg
Operating temperature	-20 °C – +50 °C	-20 °C – +50 °C
IP-Class	IPX4	IPX4
I/O-Port	RS-232	RS-232

FEATURES		FEATURES	
1	Clearly visible display with all functions FTD 05	· Coordinate measuring	· Coordinate measuring
2	RS-232 data connection for universal use of FTD 05	· Setting out points	· Setting out points
3	Complete kit supplied FTD 05	· Resection	· Resection
		· Missing line measurement	· Missing line measurement
		· Offset point	· Offset point
		· Remote elevation measurement	· Remote elevation measurement
		· Area calculation	· Area calculation
4	Clearly visible display with all functions FTD 02	· Angle repetition	· Angle repetition
5	SD Card FTD 02	· Set out line	· Set out line
6	Complete kit supplied FTD 02	· Set out curve	· Set out curve
		· Set out road	· Set out road
SUPPLIED WITH		SUPPLIED WITH	
	Charger, 2 rechargeable batteries, serialcable, software, RS 96 Stake Out Aid, container		Charger, 2 rechargeable batteries, serialcable, software, RS 96 Stake Out Aid, SD-Card, container







THE DEGREE OF PROFESSIONALISM:  
**EXTREMELY HIGH.**

Suitable for a wide range of applications including electrical, food preparation, automotive, maintenance, construction, health and safety – the environmental measurement devices from geo-FENNEL are reliable partners wherever physical values such as temperature and humidity must be precisely determined. They are characterized by their ease of use and intuitive operation – taking precise measurement to achieve visible and tangible results.

# FVE 100

## Video borescope



» Video borescope for inspection and survey of inaccessible areas.

» **Trades and tasks:** Sanitary, heating and ventilation, car industry, workshops, renovation.

### » OPTIONAL FOR FVE 100 AND FVE 150

Optional accessories: Gooseneck probes of 1 m and 2 m length with standard camera head of 17 mm and with 9 mm only.

Reference	Gooseneck length	Camera head diameter	Art.-No.
P 1-17	1 m	17 mm	800750
P 2-17	2 m	17 mm	800751
P 4-17	4 m	17 mm	800754
P 1-9	1 m	9 mm	800752
P 2-9	2 m	9 mm	800753
P 4-9	4 m	9 mm	800755



» 17 mm

» 9 mm

TECHNICAL DATA	FVE 100	FEATURES	SUPPLIED WITH FVE 100
			ART-NO. 800700
<b>Camera head</b>		<ul style="list-style-type: none"> <li>Water proof camera head and probe</li> <li>1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas</li> <li>Camera head with LED lighting</li> <li>Immediate transfer of the colour image to the large LCD display</li> <li>180° image rotation at the press of a button</li> <li>Direct transfer of image to television or notebook</li> <li>Accessories: <ul style="list-style-type: none"> <li>Hook and magnet attachments for object retrieval</li> <li>Angle mirror attachment to "view around corners"</li> </ul> </li> <li>Powerful Li-Ion battery with charger</li> </ul>	<ul style="list-style-type: none"> <li>Video borescope</li> <li>1 m flexible gooseneck probe</li> <li>TV cable</li> <li>USB cable</li> <li>Charger</li> <li>Magnet</li> <li>Hook</li> <li>Mirror</li> <li>Container</li> </ul>
Viewable angle	0° and 180°		
Focal length	6–7 cm		
Viewable distance	5–15 cm		
Diameter of camera head	17 mm		
Light source	LED		
<b>Display</b>			
Display size	3"		
Resolution	960 x 240 pixel		
Image transmission to LCD	Flexible gooseneck		
CMOS Image sensor	300.000 pixel		
Video output (to TV)	PAL / NTSC		
<b>Various</b>			
Probe length	100 cm		
Bend radius of probe	6 cm		
Dust / water protection probe and camera	IP 67		
Power supply	3.7 V / 2000 mAH Li-Ion		
Operating time	4 h		
Temperature range	-10 °C – + 50 °C		
Humidity range	15 % – 85 % RH		
Dimensions	240 x 160 x 100 mm		
Weight with probe	0.584 kg		



## FVE 150 Video borescope



» Video borescope for inspection and survey of inaccessible areas. Photos and videos can be memorized for documentation purposes.

» **Trades and tasks:** Sanitary, heating and ventilation, car industry, workshops, renovation.

1 With SD-card for fast transmission of the data to PC



TECHNICAL DATA	FVE 150	FEATURES	SUPPLIED WITH FVE 150
			<b>ART.-NO. 800710</b>
<b>Camera head</b>		<ul style="list-style-type: none"> <li>Water proof camera head and probe</li> <li>1 m long flexible gooseneck probe with camera head for the optical inspection of inaccessible areas</li> <li>Camera head with LED lighting</li> </ul>	<ul style="list-style-type: none"> <li>Video borescope</li> <li>1 m flexible gooseneck probe</li> <li>TV cable</li> <li>USB cable</li> </ul>
Viewable angle	0° and 180°		
Focal length	6–7 cm		
Viewable distance	5–15 cm		
Diameter of camera head	17 mm		
Light source	LED		
<b>Display</b>		<ul style="list-style-type: none"> <li>Immediate transfer of the colour image to the large LCD display</li> <li>180° image rotation at the press of a button</li> </ul>	<ul style="list-style-type: none"> <li>Charger</li> <li>Magnet</li> <li>Hook</li> <li>Mirror</li> <li>4 GB SD-card</li> <li>Container</li> </ul>
Display size	3.2"		
Resolution	320 x 240 pixel		
Image transmission to LCD	Flexible gooseneck		
CMOS Image sensor	300.000 pixel		
Video output (to TV)	PAL / NTSC		
Picture / video formats	JPG / 3 GP		
Resolution picture / video	320 x 240 Pixel		
<b>Various</b>		<ul style="list-style-type: none"> <li>Internal memory or SD-card to store images and video sequences</li> <li>4 GB SD-card included (supports up to 8 GB)</li> <li>Date and time indication on the display</li> <li>Transmission of video clips / images onto television or PC for editing or documentation</li> <li>Multi-language menu (DE, EN, FR, ES, IT, FI)</li> <li>Accessories: see FVE 100</li> </ul>	
Internal memory	70 MB		
Additional memory	4 GB SD-card		
	supports up to 8 GB (optional)		
Operation languages	EN, FR, DE, ES, IT, FI		
Probe length	100 cm		
Bend radius of probe	6 cm		
Dust / water protection probe / camera	IP 67		
Power supply	3.7 V / 2000 mAh Li-Ion		
Operating time	4 h		
Temperature range	-10 °C – + 50 °C		
Humidity range	15 % – 85 % RH		
Dimensions	240 x 160 x 100 mm		
Weight with probe	0.584 kg		

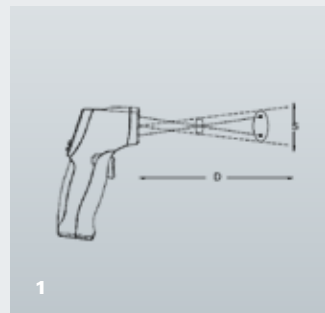
# FIRT 550-Pocket and FIRT 800-Pocket Infrared Thermometer



1 The dual laser dot to focus the target

» Small and handy infrared thermometer, easy to operate, for versatile applications. Particular feature: Measurement with dual laser to focus the target.

» **Trades and tasks:** Heating, ventilation and refrigeration systems, food industry, car industry, construction, building construction, fire inspection, injection molding industry, ship maintenance, isolation (heat loss), drying facility.



TECHNICAL DATA	FIRT 550-POCKET	FIRT 800-POCKET	FEATURES
D(istance):S(pot)	12:1	10:1	For non-contact measurement with laser dot. Quick measurements for: <ul style="list-style-type: none"> <li>· Surfaces which are difficult to reach</li> <li>· Moving or rotating objects</li> <li>· Electrified parts</li> <li>· Chemicals</li> <li>· Hot objects</li> </ul>
Temperature range	-50 °C – +550 °C	-35 °C – +800 °C	
Ø measuring spot at 100 cm	80 mm	100 mm	
Emissivity	adjustable 0.1 – 1.0	adjustable 0.1 – 1.0	
Laser pointer	yes, dual	yes, dual	
Auto data HOLD	yes	yes	
Illuminated display	yes	yes	
Max, Min	yes	yes	
High and low alarm	yes	yes	
Power supply	9 V battery	9 V battery	
Response time	< 1 sec	< 1 sec	
Resolution display	0.1 °C	0.1 °C	
Accuracy	± 1 %	± 1 %	
Laser class	2	2	
Weight	0.178 kg	0.178 kg	
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm	
			<b>SUPPLIED WITH</b> <b>FIRT 550-POCKET</b>
			ART.-NO. 800001
			· Case and battery
			<b>SUPPLIED WITH</b> <b>FIRT 800-POCKET</b>
			ART.-NO. 800002
			· Case and battery

# FIRT 1000 DataVision Infrared Thermometer



» Infrared thermometer with a large temperature range and integrated 2.2" TFT colour LC display for monitoring and evaluation of monitored data.

» **Trades and tasks:** Old-building renovation, heating, ventilation construction, building construction, food control, drying facility, isolation (heat loss).

- 1 Display with simultaneous indication of:
- Date / time
  - Ambient temperature
  - Dewpoint temperature
  - Temperature of the object measured
  - Minimum temperature
  - Maximum temperature
  - Temperature difference
  - Average temperature
  - Wet bulb temperature
  - Ambient humidity
  - Emissivity
  - Battery status indicator

- 2 Video camera function
- 3 Data log function
- 4 Digital camera function
- 5 Dewpoint temperature function



1



2



3



4



5

TECHNICAL DATA	FIRT 1000 DATAVISION	FEATURES	SUPPLIED WITH
D(istance):S(pot)	50:1	<ul style="list-style-type: none"> <li>· For non-contact temperature measurement with laser dot</li> <li>· Short response time of 150 ms and an accuracy of <math>\pm 1.0\%</math></li> <li>· 2.2" TFT colour LC display</li> <li>· Dual laser pointer for better targeting</li> <li>· Permanent measuring</li> <li>· Compatible with all standard connector Type-K thermocouples</li> <li>· Easy transmission of measurements to PC via USB</li> <li>· Memory socket for Micro-SD Cards</li> <li>· Integrated camera for images (JPEG) and video (AVI)</li> <li>· Date / Time function</li> <li>· Measurement of air humidity and ambient temperature</li> <li>· Determination of dewpoint</li> </ul>	<b>ART.-NO. 800030</b> <ul style="list-style-type: none"> <li>· Battery</li> <li>· USB cable</li> <li>· Mini tripod</li> <li>· Type-K temperature probe</li> <li>· Case</li> </ul>
Temperature range	-50 °C – +1000 °C		
Ø measuring spot at 100 cm	20 mm		
Emissivity	adjustable 0.10 – 1.0		
Laser pointer	yes, dual		
Auto data HOLD	yes		
Illuminated display	yes		
Max, Min, DIF, AVG record	yes		
High and low alarm	yes		
Power supply	3.7 V Li-Ion battery		
Response time	< 150 ms		
Resolution	0.1 °C – 1000 °C		
	1 °C over 1000 °C		
Temperature range Type-K probe	-50 °C – +1370 °C		
Accuracy (IR) (+20 °C – +400 °C)	$\pm 1.0\% \pm 1\text{ °C}$		
Accuracy (TK) (-50 °C – +1370 °C)	$\pm 0.5\% \pm 1.5\text{ °C}$		
Laser class	2		
Weight	0.45 kg		
Dimensions	205 x 62 x 155 mm		





# FIRT 1600 Data

## Infrared Thermometer

- » For very high temperature measurements.
- » With integrated memory for monitoring and analysis.
- » **Trades and tasks:** Foundry, monitoring of: brake drums, discs, electric motors, exhaust systems.

TECHNICAL DATA	FIRT 1600 DATA	FEATURES	SUPPLIED WITH
			ART.-NO. 800020
D(istance):S(pot)	50:1	<ul style="list-style-type: none"><li>· For non-contact temperature measurement with laser dot</li><li>· 150 ms fast sampling with 1 % accuracy</li><li>· High temperature range</li><li>· Built-in dual laser pointers for accurate targeting</li><li>· Permanent measuring</li><li>· Compatible with all standard connector Type-K thermocouples</li><li>· USB interface</li><li>· Memory for 99 measurements</li><li>· Easy transmission of data to PC via USB interface</li></ul>	<ul style="list-style-type: none"><li>· Battery</li><li>· USB cable</li><li>· Mini tripod</li><li>· Type-K temperature probe</li><li>· Case</li></ul>
Temperature range	-50 °C – +1600 °C		
Ø measuring spot at 100 cm	20 mm		
Emissivity	adjustable 0.10–1.0		
Laser pointer	yes, dual		
Auto data HOLD	yes		
Illuminated display	yes		
Max, Min, DIF, AVG record	yes		
Power supply	9 V battery		
Response time	Less than 150 ms		
Resolution	0.1 °C – 1000 °C		
	1 °C over 1000 °C		
Temperature range Type-K probe	-50 °C – +1370 °C		
Accuracy (IR) (+20 °C – +400 °C)	± 1.0 % ± 1 °C		
Accuracy (TK) (-50 °C – +1370 °C)	± 1.5 % of reading + 3 °C		
Laser class	2		
Weight	0.3 kg		
Dimensions	204 x 155 x 52 mm		



# FHT 70 DataLog

## Temperature and Humidity Data Logger

- » Data logger for recording temperatures and air humidity over a longer period for check-up and analysis.
- » **Trades and tasks:** Cold storage house, drying, gallery, food industry.

TECHNICAL DATA				FHT 70 DATALOG	FEATURES
Function	Range	Basic accuracy	Resolution	<ul style="list-style-type: none"><li>Measures temperature and air humidity</li><li>Internal memory for 32.700 readings (3 x 10.900)</li><li>Selectable measurement cycle from 1 sec to 24 h</li><li>LCD with date, time, temperature, humidity, limit value</li><li>Software for analysis</li></ul>	
Relative humidity	0 % – 100 % RH	± 3.0 %	0.1 % RH		
Temperature	-40 °C – 70 °C	± 1 °C	± 0.1 °C		
Dew point temperature	-40 °C – 70 °C	± 2 °C	± 0.1 °C		
Logging rate	Select sampling interval from 1 sec to 24 h				
Operating temperature	-35 °C – +80 °C		SUPPLIED WITH		
Power supply	3.6 V Lithium				
Size	132 x 66 x 37				
Weight	180 g				
			ART.-NO. 800120		
			<ul style="list-style-type: none"><li>3.6 V lithium battery</li><li>Software</li><li>Clamshell</li></ul>		

# FT 1300-1 / FT 1300-2

## Professional K-Type Thermometers with single and dual input



» **Trades and tasks:** Temperature measurements of liquid construction materials like asphalt, isolation checks, measurements in the HVAC branch, energy supply, industrial and laboratory application.

TECHNICAL DATA	FT 1300-1	FT 1300-2	FEATURES
ART.-NO.	800400	800410	
Scanfunction	1 measurement	2 measurements simultaneously or temperature difference	<ul style="list-style-type: none"> <li>· Indication of maximum value (MAX)</li> <li>· Data HOLD function</li> <li>· Large display (45 mm) with illumination</li> </ul>
Sampling rate	2.5 x per second	2.5 x per second	
Accuracy	± 0,5 % / ± 1 °C	± 0,5 % / ± 1 °C	
Display resolution	0.1 °C / 1 °C	0.1 °C / 1 °C	
Temperature range	-50 °C – +1300 °C	-50 °C – +1300 °C	
Measuring units	°C / °F / K	°C / °F / K	<b>SUPPLIED WITH</b> <ul style="list-style-type: none"> <li>· Flexible wire probe TP-300</li> <li>· Set of batteries</li> <li>· Case</li> </ul>
Dimensions	162 x 76 x 39 mm	162 x 76 x 39 mm	
Weight	0.21 kg	0.21 kg	
Power supply	Alkaline batteries	Alkaline batteries	

# FT 1000-Pocket

## Digital Thermometer



» **Trades and tasks:** Temperature measurement of liquids and soft materials.

TECHNICAL DATA	FT 1000-POCKET	FEATURES	SUPPLIED WITH
Temperature range	-20 °C – +1000 °C	<ul style="list-style-type: none"> <li>· Handy thermometer with immersion probe</li> <li>· Pocket-size, light weight, easy to operate</li> </ul>	ART.-NO. 800420
Accuracy	± 3 %		<ul style="list-style-type: none"> <li>· Set of batteries</li> <li>· Incorporated all-purpose probe</li> </ul>
HOLD function	yes		
Automatic shut-off	yes		
Battery status indicator	yes		
Dimensions	117 x 65 x 24 mm		
Weight	0.16 kg		
Power supply	Alkaline batteries		

# FHT 60 and FHT 100

## Humidity and Temperature Meter

» **Trades and tasks:** Environmental monitoring, warehouses, production facilities, greenhouses (floristics), ventilating and air-conditioning, civil engineering, construction physics, expert report.



» FHT 60



» FHT 100

TECHNICAL DATA	FHT 60	FHT 100	FEATURES
ART.-NO.	800100	800110	
Temperature range	-20 °C – +60 °C	-30 °C – +100 °C	· Fast measurement of relative humidity and temperature  <b>FHT 100</b> · Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature)
Humidity range	0 % – 100 % RH	0 % – 100 % RH	
Fast response time	yes	yes	
Illuminated display	yes	yes	
Max HOLD	yes	yes	
Data HOLD	yes	yes	
Dewpoint temperature	no	-30 °C – +100 °C	
Wet bulb temperature	no	0 °C – +80 °C	
Accuracies:			
Humidity	± 3.5 % RH	± 2 % RH	
Temperature	± 2 °C	± 0.5 °C	<b>SUPPLIED WITH</b>  · Case · Battery
Dewpoint	–	± 0.5 °C	
Wet bulb	–	± 0.5 °C	



## FHM 10 Moisture Meter

» Pocket-size moisture meter for fast and convenient measurement of moisture content.

» **Trades and tasks:** Building and construction: plaster, gypsum, concrete and mortar; wood construction: sawn timber; general: firewood, wood, cardboard, paper.

TECHNICAL DATA	FHM 10	FEATURES	SUPPLIED WITH
Measuring range wood	6 % – 44 %	<ul style="list-style-type: none"> <li>Measurement principle: electrical resistance</li> <li>Dual display for wood and construction materials</li> <li>Replaceable 8 mm measuring pins</li> <li>Protective cap with integrated function and battery check</li> <li>Automatic power-off</li> <li>Impact resistant housing</li> </ul>	ART.-NO. 800310
Accuracy wood	± 1 % *		<ul style="list-style-type: none"> <li>9 V alkaline battery</li> </ul>
Measuring range other materials	0.2 % – 2 %		
Accuracy other materials	± 0,05 %		
Power supply	3 x CR2032 batteries		
Dimensions	130 x 40 x 25 mm		
Weight	102 g		

\* Average adjustment for European wood based on wood temperature of 20 °C



## FHM 20 Moisture Meter

» Moisture meter for wood and building materials.

Wood: Calibrated to 170 wood types in 8 groups.

**Building materials:** Gypsum, plaster, concrete, concrete screeds, mortar, cardboard, paper.

Measurement of humidity permeation, surface humidity, determination of dry and humid areas.

1 Moisture and temperature probe

TECHNICAL DATA	FHM 20	FEATURES	SUPPLIED WITH
Measuring principle	Electrical resistance	<ul style="list-style-type: none"> <li>External moisture measurement probe</li> <li>External temperature probe: at measurement with moisture and temperature probe the moisture measurement is carried out with automatic temperature compensation. This leads to a higher accuracy</li> <li>8 mm measuring pins (replaceable)</li> <li>Protective cap with integrated calibration check</li> <li>Battery indicator</li> <li>Automatic power-off (adjustable time)</li> </ul>	ART.-NO. 800320
Measuring range wood	6 – 99,9 %		<ul style="list-style-type: none"> <li>Moisture and temperature probe</li> <li>Padded bag</li> <li>2 x spare measuring pins</li> <li>2 x AAA Batteries</li> </ul>
Accuracy wood	± 1 % *		
Measuring range building materials	3–33 %		
Accuracy building materials	± 1 %		
Range temperature measurement	0 °C – +60 °C		
Dimensions	180 mm x 50 mm x 31 mm		
Weight	175 g		

\* Average adjustment for European wood at 20 °C





## FFM 100 Moisture Detector

» Quick non-destructive measurement of surface humidity up to 40 mm measuring depth.

» **Trades and tasks:** Building materials, concrete floors, walls, ceilings.

TECHNICAL DATA	FFM 100	FEATURES	SUPPLIED WITH
			<b>ART.-NO. 800650</b>
Measuring depth	20 – 40 mm	Quick measurement of humidity in building materials without destruction of the surface · Indication of minimum / maximum values · Sensor type: metal spheroid	· Set of batteries
Measuring range	0 – 100 digits		
Resolution	1 digit		
HOLD function	yes		
Display illumination	yes		
Automatic shut-off	yes		
Battery status indication	yes		
Dimensions	80 x 45 x 45 mm		
Weight	0.18 kg		
Power supply	Alkaline batteries		



## FTA 1 Thermometer-Anemometer

» A professional remote vane thermo-anemometer for measuring air velocity, air flow and temperature.

» **Trades and tasks:** Ventilation and air-conditioning: installation of ventilation systems, measurements of air flow and temperature; agriculture: crop spraying, ventilation surveys and crop storage; environmental monitoring.

TECHNICAL DATA	FTA 1	FEATURES
<b>Air velocity</b>	<b>Measuring range</b>	· Simultaneous display of air flow or air velocity and ambient temperature · Large easy-to-read LCD with switchable backlight · Maximum / minimum function · 20 average readings for air flow and air velocity · Data HOLD function · 16 memory locations for area (8 CMM, 8 CFM) · Remote vane with low-friction bearing (65 mm diameter) for accurate results
m/s	0.40 – 30.00	
ft/min	80 – 5900	
km/h	1.4 – 108.0	
mph	0.9 – 67.0	
knots	0.8 – 58.0	
<b>Air flow</b>	<b>Measuring range</b>	
CMM (m³/min)	0 – 999,900	
CFM (ft³/min)	0 – 999,900	
<b>Air temperature</b>	<b>Measuring range</b>	<b>SUPPLIED WITH</b> <b>ART.-NO. 800450</b> · Sensor with 120 cm cable · 9 V alkaline battery · Container
°C	-10 °C – +60 °C	
°F	14 °F – 140 °F	
<b>Various</b>		
Power supply	1 x 9 V	
Operating time	80 h	
Dimensions	75 x 203 x 50 mm	
Weight	280 g	



## FSM 130+ Sound Level Meter

» **Trades and tasks:** Industry, health and safety, school, public works, environmental measurements.

TECHNICAL DATA	FSM 130+	FEATURES	SUPPLIED WITH
			ART.-NO. 800210
Low range (Lo)	35–100 dB	· For quick check of sound level · Standard IEC 651 type 2	· Case · Battery
High range (Hi)	65–130 dB		
Frequency weighting A, C	Lo 35–100 dB Hi 65–130 dB		
Max HOLD	yes		
Data HOLD	yes		
Analogue AC/DC output to analyzer or recorder	yes		
IEC 651 Type 2 standard	yes		
Built-in calibration check	yes		
Accuracy at 94 dB	1.5 dB		
Operation temperature	0 °C – +40 °C		
Operation humidity	< 80 % RH		



## FMM 5 5-in-1 Digital Multimeter



» **Trades and tasks:** Universal measuring device for DC and AC voltage, DC current resistance, transistor hFE diode and continuity test, light (luminosity), sound, humidity, temperature overload protection.

TECHNICAL DATA		FMM 5		SUPPLIED WITH	
				ART.-NO. 800600	
Multimeter	Max. Range	Resolution	Accuracy	<div><div></div>All-purpose probe TP-500</div> <div><div></div>Set of batteries</div> <div><div></div>Case</div> <div><div></div>Testing cable</div>	
Voltage DC	600 V	0.1 mV	± 0.5 % ± 2 *		
Voltage AC	600 V	100 mV	± 1.2 % ± 10 *		
Current DC	10 A	0.1 µA	± 1.0 % ± 2 *		
Resistance	20 MΩ	0.1 Ω	± 0.8 % ± 2 *		
Environment	Max. Range	Resolution	Accuracy		
Light (luminosity)	20,000 Lux	0.1 Lux	± 0.5 % ± 10 *		
Sound	100 dB	0.1 dB	± 3.5 dB		
Humidity	95 % RH	0.1 % RH	± 5.0 % RH		
Temperature	-20 °C – +200 °C	0.1 °C	± 3.0 % ± 1 *		
	-20 °C – +1300 °C	0.1 °C	± 3.0 % ± 5 *		

\* Digits



## FGD 1 Gas Leak Detector

- » Easy-to-use gas leak detector for locating gas leaks from a safe position.
- » Detects following gas types: Natural gas, propane, butane, methane, acetone, alcohol, gasoline, jet fuel, carbon monoxide, ammonia, steam, hydrogen sulfide, smoke, industrial solvents, lacquer thinner, naphta.
- » **Trades and tasks:** Gas industry, chemical industry, laboratory, car repair shops.

TECHNICAL DATA	FGD 1	FEATURES	SUPPLIED WITH
Sensitivity	50 ppm	<ul style="list-style-type: none"> <li>· 40 cm gooseneck detector</li> <li>· Visual leak detection by LED indicators</li> <li>· Precision sensor detects even the smallest leaks</li> <li>· Fast response of less than two seconds</li> <li>· Includes earphone jack</li> </ul>	ART.-NO. 800470
Sensor type	Low power semi-conductor		<ul style="list-style-type: none"> <li>· Batteries</li> </ul>
Warm-up time	approx. 60 sec		
Response time	< 2 sec		
Duty cycle	continuous		
Probe length	40 cm		
Power supply	3 x C Alkaline		
Operating time	8 h		
Alarm	visible and audible		
Size	221 x 72 x 46 mm		
Weight	498 g		



## FLM 400 Data Luxmeter

- » Luxmeter for professional indoor measuring and monitoring of light insolation.
- » **Trades and tasks:** Building construction, indoor construction, censor.

TECHNICAL DATA	FLM 400 DATA	FEATURES	SUPPLIED WITH
Maximum measuring range	400,000 Lux	<ul style="list-style-type: none"> <li>· Measuring range 0 to 400,000 Lux</li> <li>· Sampling rage 1.5 times / sec</li> <li>· Large LC display</li> <li>· Measuring range 4,000 digits</li> <li>· 41 analogue bargraph indication</li> <li>· 99 values in memory for direct reading on the meter</li> <li>· 16,000 values can be stored in data logger</li> <li>· Max / Min function</li> <li>· High accuracy and short response time</li> <li>· USB-interface</li> </ul>	ART.-NO. 800510
Accuracy	± 5 % ± 10 d (< 10,000 Lux)		<ul style="list-style-type: none"> <li>· 9 V battery</li> <li>· Photo detector</li> <li>· USB cable</li> <li>· Software</li> <li>· Carrying case</li> </ul>
	± 10 % ± 10 d (> 10,000 Lux)		
Resolution	0.1 Lux		
Sampling rate	1.5 times / sec		
Data HOLD function	yes		
Automatic power-off	yes		
Output	USB		
Power supply	9 V NiMh		
Size photo detector	115 x 60 x 27 mm		
Size instrument	203 x 75 x 50 mm		
Weight	390 g		



## FCT 1 Data Coating Thickness Tester

» Coating Thickness Tester for fast testing and measuring of non-magnetic coatings on steel or non-ferrous metals.

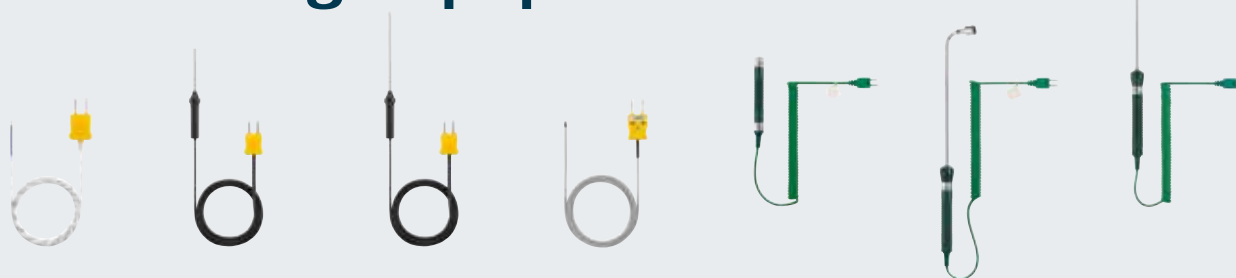
» **Trades and tasks:** Paint shops, car industry, construction.

» Accessories for calibration



TECHNICAL DATA	FCT 1 DATA		FEATURES	SUPPLIED WITH
	<b>Probe F</b>	<b>Probe N</b>		<b>ART.-NO. 800460</b>
Working principle	Magnetic induction	Eddy current principle	<ul style="list-style-type: none"> <li>Internal memory for 80 readings per group</li> <li>Easy data transfer to PC by USB</li> <li>PC software</li> <li>Measures insulating coatings on non-ferrous metals</li> <li>Automatic recognition of the material (Fe / NFe)</li> <li>Sensor with V-groove for measurements of round objects</li> <li>Magnetic induction and eddy current measuring principle</li> <li>Single and permanent measurement</li> <li>AVG / Max / Min function</li> <li>Alarm function</li> </ul>	<ul style="list-style-type: none"> <li>2 x AA batteries</li> <li>USB cable</li> <li>Software</li> <li>Calibration accessories</li> <li>Case</li> </ul>
Measuring range	0 – 1250 µm 0 – 49.21 mils	0 – 1250 µm 0 – 49.21 mils		
Guaranteed tolerance (of reading)	0 – 850 µm (± 3 % +1 µm) 0 – 33.46 mils (± 3 % +0.039 mils)	0 – 850 µm (± 3 % +1.5 µm) 0 – 33.46 mils (± 3 % +0.059 mils)		
	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)	850 – 1250 µm (± 5 %) 33.46 – 49.21 mils (± 5 %)		
Resolution 0 – 50 µm	0.1 µm	0.1 µm		
Resolution 0 – 1.968 mils	0.001 mils	0.001 mils		
Diameter of minimum area	7 mm	5 mm		
Basic thickness of material	0.5 mm	0.3 mm		
Working temperature	0 °C – +40 °C	0 °C – +40 °C		
Working relative humidity	20 % ~ 90 %	20 % ~ 90 %		
Power supply	2 x AAA NiMH	2 x AAA NiMH		
Size	113.5 x 54 x 27 mm	113.5 x 54 x 27 mm		
Weight	110 g	110 g		

## Accessories for Environmental Measuring Equipment



» TP-300

» TP-500

» TP-550

» NR-88B

» NR-31B

» NR-33

» NR-38

### OUTLINE

Accessories	Function	Length	Temperature range	suitable for	ART.-NO.
TP-300	Flexible wire probe	100 cm	-50 °C – +300 °C	FT1300-1, -2, FMM5	800900
TP-500	All-purpose probe (metal tip length 7 mm)	85 cm	-50 °C – +900 °C	FT1300-1, -2, FMM5	800901
TP-550	All-purpose probe (metal tip length 15.5 cm)	94 cm	-50 °C – +900 °C	FT1300-1, -2, FMM5	800906
NR-88B	Flexible steel probe	100 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800902
NR-31B	Surface temperature probe	12 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800903
NR-33	Right angle surface temperature probe	34 cm	-50 °C – +450 °C	FT1300-1, -2, FMM5	800904
NR-38	Air temperature probe	21 cm	-50 °C – +800 °C	FT1300-1, -2, FMM5	800905







WITH AN EYE TO THE FUTURE:

# PRECISION MEETS INNOVATION.

No matter how difficult the conditions you encounter on a construction site – with our products, easy and efficient measurement is possible in every situation. Whether you want to measure angles, inclines or distances: the decision to use electronic measuring instruments from geo-FENNEL is the correct choice. They set standards for measurement results and provide a high level of quality through the combination of the most modern production technologies with the care and attention provided by our technical experts.



# GeoDist® 40

## Laser Distance Meter



» **Easy to use, quick and precise. Measure distances of up to 40 m at the touch of a button.**

**Compact, lightweight and so much more:**

- Distance, area and volumes
- Height measurement using Pythagoras function
- Addition and subtraction of measurements
- Maximum / minimum / permanent measurement
- Illuminated display

1 Clear LCD display



1

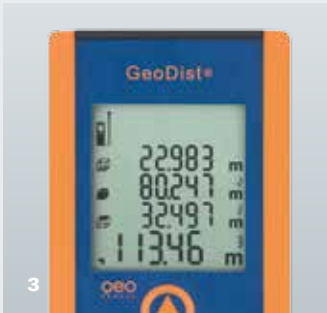
TECHNICAL DATA	GEODIST 40	FEATURES	SUPPLIED WITH
			ARTIKEL-NR. 300040
Accuracy	± 2.0 mm	· Minimum / maximum (and difference)	· Holster · Batteries
Measuring distance	40 m	· Permanent measurement	
Laser class	2	· Plus / minus	
Dust / water protection	IP 54	· Area / volumes	
Dimensions	114 x 45 x 25 mm	· Pythagoras functions	
Weight (with batteries)	98 g	· Point of reference: front, rear	
		· Self-timer, adjustable	
		· Illumination of display	
		· mm, ft, inch	
		· Acoustic signal confirming the measurement	

# GeoDist® Laser Distance Meter



» A new professional Laser distance meter for the precise measurement of distance, area, volume and much more. The combination of a robust ergonomic design and tactile grip makes it quick, efficient and easy to use. All the essential features you need – at a competitive price.

» **The multi-functional endpiece**  
Achieve optimum results when measuring from hard to access positions. The instrument detects the 90° **1** or 180° **2** position of the multi-functional endpiece and automatically corrects the measuring reference point accordingly.



3 Room summary function

TECHNICAL DATA	GEODIST	FEATURES	SUPPLIED WITH
			ARTIKEL-NR. 300030
Accuracy	± 1.0 mm	· Minimum / maximum	· Holster
Measuring distance	typ. 80 m	· Permanent measurement	· Carrying strap
with target plate	100 m	· Plus / minus	· Batteries
Laser class	2	· Area / volumes	
Resolution	0.1 mm	· Painter's function	
Protection	IP 54	· Room calculation summary	
Dimensions	120 x 58 x 29 mm	· Pythagoras functions	
Weight	146 g	· Stake-out	
Tripod connection	Camera tripod	· Point of reference: front, rear, tripod	
		· mm, ft, inch	
		· Multi-functional endpiece	

Range and accuracy  
test according to  
DIN ISO 16331-1





## EcoDist Pro

» The perfect starter model with professional features.



TECHNICAL DATA	ECODIST PRO	FEATURES	SUPPLIED WITH
			ART.-NO. D1760
Distance	typ. 40 m	· Plus / minus	· Holster · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Distance with target plate	50 m	· Area / volumes	
Accuracy	± 2.0 mm	· Permanent measurement	
Dust / water protection	IP 40	· Pythagoras functions	
Weight	110 g	· Reference front / rear	
Laser class	2	· mm, ft, inch	



## DISTO D110

» World's smallest laser distance meter with integrated Bluetooth® Smart technology. Makes it possible to easily create floor plans and sketches using precise measurements from the Leica DISTO™ D110 quickly by connecting it with the Leica DISTO™ sketch app on your smartphone or tablet.



TECHNICAL DATA	DISTO D110	FEATURES	SUPPLIED WITH
			ART.-NO. 300010
Accuracy	± 1.5 mm	· Permanent measurement	· Holster · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Measuring distance	0.2 – 60 m	· Area	
Laser class	2	· Bluetooth® Smart	
Dust / water protection	IP 54	· Leica Disto™ sketch app	
Dimensions	120 x 37 x 23 mm	· Illumination of display	
Weight (with batteries)	92 g	· mm, ft, inch	
		· Acoustic signal confirming the measurement	



## DISTO D210

» Easy to use and just right and functional.



TECHNICAL DATA	DISTO D210	FEATURES	SUPPLIED WITH
			ART.-NO. 300011
Distance	0.05 – 80 m	· Minimum / maximum	· Holster · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Accuracy	± 1.0 mm	· Permanent measurement	
Dust / water protection	IP 54	· Plus / minus	
Weight	126 g	· Area / volume	
Laser class	2	· Height measurement (Pythagoras)	
		· Measurement despite obstructions	
		· Stake-out function	
		· mm, ft, inch	
		· Multi-functional endpiece	



## DISTO X310

» Solid and versatile, protected against water jets and dust-tight.



TECHNICAL DATA	DISTO X310	FEATURES	SUPPLIED WITH
			ART-NO. 300012
Distance	0.05 – 80 m	· Minimum / maximum	· Holster · Hand loop · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Accuracy	± 1.0 mm	· Permanent measurement	
Dust / water protection	IP 65	· Plus / minus	
Weight	155 g	· Area / volume	
Laser class	2	· Room function summary	
		· Height measurement (Pythagoras)	
		· Measurement despite obstructions	
		· Stake-out function	
		· 360° TILT sensor	
		· mm, ft, inch	
		· Multi-functional endpiece	



## DISTO D510

» Colour display, digital pointfinder, TILT sensor: Reliable outdoor applications.



TECHNICAL DATA	DISTO D510	FEATURES	SUPPLIED WITH
			ART-NO. 300007
Distance	0.05 – 200 m	· Minimum / maximum	· Holster · Hand loop · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Accuracy	+/- 1.0 mm	· Permanent measurement	
Dust / water protection	IP 65	· Plus / minus	
Weight	198 g	· Area / volume	
Laser class	2	· Room function summary	
		· Indirect height measurement (Pythagoras)	
		· Measurement despite obstructions	
		· Measurement of facade areas	
		· 360° TILT sensor	
		· Bluetooth® smart	



## DISTO D810 touch

» Large touchscreen for intuitive use, camera function, measurements inside a picture, Bluetooth® smart.



TECHNICAL DATA	DISTO D810	FEATURES	SUPPLIED WITH
			ART-NO. 300009
Distance	0.05 – 200 m	· Minimum / Maximum	· Holster · Hand loop · Batteries  <i>Range and accuracy test according to DIN ISO 16331-1</i>
Accuracy	± 1.0 mm	· Permanent measurement	
Dust / water protection	IP 54	· Plus / minus	
Weight	238 g	· Area / volume	
Laser class	2	· Room function summary	
		· Indirect height measurement (Pythagoras)	
		· Measurements despite obstructions	
		· Measurement of facade areas	
		· Bluetooth®	
		· 360° TILT sensor for measurement of any slope (even overhead)	



# Electronic Slope Measurers

» Our latest generation of inclinometers with a new enhanced TILT sensor, that offers the following:

- Fast reaction time
- A stable display for improved accuracy
- Improved thermal stability
- Zero position re-set at any position
- Illuminated display

## S-Digit mini +

» Electronic inclinometer. Handy-size and accurate. This ensures easy measurement even in the most difficult situations.



TECHNICAL DATA	S-DIGIT MINI +	FEATURES	SUPPLIED WITH
			ART.-NO. 610010
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· Magnetic housing</li> <li>· 1/4" thread for camera tripod</li> </ul>	<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>
Resolution	0.1° / 0.1 %		
Accuracy	± 0.1°		
Measuring units	°, %, mm/m, in/ft		
Power supply	3 x AA Alkaline		
Operating time	600 h		
Temperature range	-10 °C – +45 °C		
Weight (incl. Batteries)	0.37 kg		
Size	164 x 60 x 32 mm		

## S-Digit multi +

» Electronic inclinometer with a rotatable display for easy reading in many positions.



- 1 Easy reading even from above    2 Integrated laser beam

TECHNICAL DATA	S-DIGIT MULTI +	FEATURES	SUPPLIED WITH
			ART.-NO. 630010
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· 180° rotatable display</li> <li>· Visible laser beam to extend working range</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· Magnetic housing</li> <li>· 1/4" thread for camera tripod</li> </ul>	<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>
Resolution	0.1° / 0.1 %		
Accuracy	± 0.1°		
Measuring units	°, %, mm/m, in/ft		
Working range laser	20 m		
Accuracy laser	± 0.5 mm / 1 m		
Wave length / laser class	650 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	w/o laser 50 h with laser 20 h		
Temperature range	-10 °C – +45 °C		
Weight (incl. Batteries)	0.67 kg		
Size	305 x 60 x 32 mm		



## S-Digit 60 +

- » Robust slope measurer. Length 60 cm.  
Incorporated laser beam.

- 1 Clearly visible display – standard or “overhead”
- 2 With laser beam to extend working range



TECHNICAL DATA	S-DIGIT 60 +	FEATURES	SUPPLIED WITH
Working range	4 x 90°	<ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· Visible laser beam to extend working range</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· 1/4" thread for camera tripod</li> </ul>	ART.-NO. 620010
Resolution	0.1° / 0.1 %		<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>
Accuracy 0° and 90°	± 0.1°		
Accuracy 1° – 89°	± 0.2°		
Measuring units	°, %, mm/m, in/ft		
Working range laser	20 m		
Accuracy laser	± 0.5 mm / 1 m		
Wave length / laser class	650 nm / 2		
Power supply	3 x AA Alkaline		
Operating time	w/o laser 50 h with laser 20 h		
Temperature range	-10 °C – +45 °C		
Weight (incl. Batteries)	0.86 kg		
Size	600 x 60 x 32 mm		

## S-Digit 60WL + and S-Digit 120WL +

- » Electronic inclinometers for everyday use.



TECHNICAL DATA	S-DIGIT 60WL +	S-DIGIT 120WL +	SUPPLIED WITH
ART.-NO.	640010	640110	<ul style="list-style-type: none"> <li>· Padded bag</li> <li>· Batteries</li> </ul>
Length	60 cm	120 cm	
Measuring units	°, %, mm/m, in, ft	°, %, mm/m, in, ft	<b>FEATURES</b> <ul style="list-style-type: none"> <li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li> <li>· Inclination direction indication</li> <li>· Zero position re-set at any position</li> <li>· Automatic digit inversion for overhead measurements</li> <li>· 180° rotatable display</li> <li>· HOLD function to freeze measurement</li> <li>· Illuminated display</li> <li>· 1 or 2 recessed hand grips for ergonomic use</li> </ul>
HOLD function	yes	yes	
Accuracy 0° and 90°	± 0.1°	± 0.1°	
Accuracy 1° – 89°	± 0.2°	± 0.2°	
Power supply	3 x AAA Alkaline	3 x AAA Alkaline	
Operating time	60 h	60 h	
Weight	0.68 kg	1.1 kg	
Dimensions	600 x 61 x 28 mm	1200 x 61 x 28 mm	
Temperature range	-10 °C – +45 °C	-10 °C – +45 °C	



# Multi-Digit Pro + All-in-one

» Electronic angle measurer, electronic slope measurer and laser spirit level. Easy and accurate. For measuring angles, inclinations, sloped and plane surfaces.



TECHNICAL DATA		MULTI-DIGIT PRO +	FEATURES	FEATURES
			<ul style="list-style-type: none"><li>· Displays angle and inclination simultaneously</li><li>· Different signal tones when approaching 0° / 90° and continuous tone at 0° / 90°</li><li>· Inclination direction indication</li><li>· Zero position re-set at any position</li><li>· Automatic digit inversion for overhead measurements</li><li>· Visible laser beam to extend working range</li><li>· HOLD function to freeze measurement</li><li>· Illuminated display</li><li>· Magnetic base</li><li>· 1/4" thread for camera tripod</li></ul>	<ul style="list-style-type: none"><li>· 180° lock to extend the unit to 1 m length</li><li>· Arm can be locked in any position</li></ul>
Working range inclination	4 x 90°			
Resolution	0.1° / 0.1 %			
Accuracy inclination 0° and 90°	± 0.1°			
Accuracy inclination 1° – 89°	± 0.2°			
Measuring units	°, %, mm/m, in/ft			
Working range angle	0° – 180°			
Resolution	0.1° / 0.1 %			
Accuracy angle	± 0.1°			
Working range laser	20 m			
Accuracy laser	± 0.5 mm / 1 m			
Wave length / laser class	650 nm / 2			
Power supply	3 x AA Alkaline			
Operating time	w/o laser 48 h with laser 20 h			
Temperature range	-10 °C – +45 °C			
Weight (incl. Batteries)	1.3 kg			
Size	520 x 63 x 30 mm			
Unfolded length	1000 mm			

## A-Digit 50 and 75

» Robust electronic angle measurer made of anodized aluminium.



TECHNICAL DATA		A-DIGIT 50 AND 75	FEATURES	A-DIGIT 50
			<ul style="list-style-type: none"><li>· Angle measurement</li><li>· Supplement angle</li><li>· Easy mitre angle</li><li>· Compound angle mode</li><li>· Available in length of 50 cm and 75 cm</li></ul>	ART.-NO. 650050
Measuring range	0° – 225°			<ul style="list-style-type: none"><li>· Padded bag</li><li>· Batteries</li></ul>
Digital angle accuracy	± 0,1°			
Resolution	0.05°			
Accuracy of vials	0.057° (1 mm / m)			
Operation temperature	-10 °C – + 50 °C			A-DIGIT 75
Power supply	2 x AAA batteries			
Operation time	100 h			
Length unfolded A-Digit 50	991 mm			
Length unfolded A-Digit 75	1410 mm			
Weight A-Digit 50 (A-Digit 75)	0.9 kg (1.1 kg)		ART.-NO. 650075	
			<ul style="list-style-type: none"><li>· Padded bag</li><li>· Batteries</li></ul>	

# Angle Finder

» For angle measurement up to 180°.



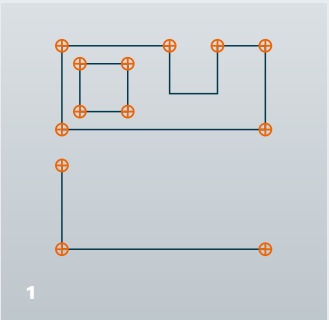
ANGLE FINDER	
ART.-NO. M381005	
<ul style="list-style-type: none"><li>· Easy measurement of angles from 0° to 180° in 1° increment</li><li>· Horizontal and vertical vials</li><li>· With clamping screw</li></ul>	<ul style="list-style-type: none"><li>· Built-in ends for use as compasses for scribing</li><li>· Length: 40 cm</li></ul>

# Scale Master Pro XE

» Professional digital plan measurer. 91 architectural, engineering, map and metric blueprint scales. Perform instant linear, rectangular area and volume take-offs. Reads your measurement in feet / inches or metric. Subtract, constant and counter.



1 Example



SUPPLIED WITH SCALE MASTER PRO XE	OPTIONAL
ART.-NO. 6135	ART.-NO. 5001B
<ul style="list-style-type: none"><li>· Scale Master Pro XE with case</li><li>· Batteries</li><li>· Manual</li></ul>	<ul style="list-style-type: none"><li>· USB cable for data transfer to PC</li></ul>







OUR INVITATION:

# ALWAYS NEW CHALLENGES TO CONQUER.

The versatility of measuring instruments from geo-FENNEL can be increased significantly by using our wide range of precisely coordinated surveying accessories. Regardless of the profession or application, the know-how from many decades of experience in the field of measurement technology and surveying resides in our products.



» Elevating tripods with adjustable range – ideal for all rotating and line lasers.

## FS 10 Elevating Tripod



## FS 12 Elevating Tripod



FS 10	FS 12
ART.-NO. 302000	ART.-NO. 303000
<ul style="list-style-type: none"> <li>· Rotating head</li> <li>· 67–188 cm (incl. 30 cm centre column)</li> <li>· 2.3 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Rotating head</li> <li>· 73–244 cm (incl. 30 cm centre column)</li> <li>· 2.65 kg</li> </ul>
<ul style="list-style-type: none"> <li>· Lightweight elevating tripod made of aluminium for instruments with 5/8" thread</li> <li>· Incorporated circular bubble</li> <li>· Incl. bag</li> </ul>	<ul style="list-style-type: none"> <li>· Lightweight elevating tripod made of aluminium for instruments with 5/8" thread</li> <li>· Incorporated circular bubble</li> <li>· Incl. bag</li> </ul>

## FS 40 Aluminium Tripod



## FS 30-S Elevating Tripod



FS 40	FS 30-S
ART.-NO. 150	ART.-NO. 155
<ul style="list-style-type: none"> <li>· Column / Flat head</li> <li>· 95–186 cm (incl. 30 cm centre column)</li> <li>· 3.2 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Column / Flat head</li> <li>· 68–138 cm</li> <li>· 4.2 kg</li> </ul>
<ul style="list-style-type: none"> <li>· Adjustable range of centre column 30 cm</li> <li>· Quick clamp system</li> <li>· Incl. shoulder carrying strap</li> </ul>	<ul style="list-style-type: none"> <li>· Short tripod ideal for cutting checks</li> <li>· Adjustable range of centre column 35 cm</li> <li>· Quick clamp system, shoulder carrying strap</li> <li>· Robust chains between tripod legs</li> <li>· Integrated retractable rubber pads for non-slip use on hard surfaces</li> <li>· Continuous opening for instruments with plumb down facility</li> <li>· Built-in circular bubble</li> </ul>

## FS 14 Camera Tripod



## FS 30-XS Elevating Tripod



FS 14	FS 30-XS
ART.-NO. 301000	ART.-NO. 165
<ul style="list-style-type: none"> <li>· Rotating head</li> <li>· 57–161 cm</li> <li>· 1.4 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Column / Flat head</li> <li>· 101–300 cm</li> <li>· 5.7 kg</li> </ul>
<ul style="list-style-type: none"> <li>· Lightweight elevating tripod made of aluminium for instruments with 1/4" thread</li> <li>· Ideal as accessory for laser distance meter</li> <li>· Incl. bag</li> </ul>	<ul style="list-style-type: none"> <li>· Adjustable range of centre column 36 cm</li> <li>· Fine crank drive for exact adjustment</li> <li>· Upper column length 43 cm</li> <li>· Quick clamp system, shoulder carrying strap</li> <li>· Struts between tripod legs</li> <li>· Integrated retractable rubber pads for non-slip use on hard surfaces</li> <li>· Retracted length 1.1 m for convenient transport</li> <li>· Built-in circular bubble</li> </ul>

## FS 30-M Elevating Tripod



## FS 30-L Elevating Tripod



FS 30-M	FS 30-L
ART.-NO. 158	ART.-NO. 156
<ul style="list-style-type: none"> <li>· Column / Flat head</li> <li>· 80–200 cm</li> <li>· 5.2 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Column / Flat head</li> <li>· 95–285 cm</li> <li>· 8.2 kg</li> </ul>
<ul style="list-style-type: none"> <li>· Adjustable range of centre column 39 cm</li> <li>· Quick clamp system, shoulder carrying strap</li> <li>· Robust chains between tripod legs</li> <li>· Integrated retractable rubber pads for non-slip use on hard surfaces</li> <li>· Continuous opening for instruments with plumb down facility</li> <li>· Built-in circular bubble</li> </ul>	<ul style="list-style-type: none"> <li>· Adjustable range of centre column 40 cm</li> <li>· Quick clamp system, shoulder carrying strap</li> <li>· Robust chains between tripod legs</li> <li>· Integrated retractable rubber pads for non-slip use on hard surfaces</li> <li>· Built-in circular bubble</li> <li>· Continuous opening for instruments with plumb down facility</li> </ul>

## FS 50-M Elevating Tripod

- » High quality elevating tripods designed to be compact and durable – a stable platform for any rotating laser, even in adverse weather conditions.



TECHNICAL DATA	FS 50-M	FEATURES
		ART-NO. 164
Column / Flat head		
Working range	80–220 cm	· Adjustable range of centre column 108 cm
Weight	7.2 kg	· Struts between tripod legs for increased stability
		· Central clamping of the struts
		· Integrated retractable rubber pads for non-slip use on hard surfaces
		· Continuous opening for instruments with plumb down facility
		· Built-in circular bubble

## FS 50-L Elevating Tripod



TECHNICAL DATA	FS 50-L	FEATURES
		ART-NO. 166
Column / Flat head		
Working range	114–290 cm	· Adjustable range of centre column 108 cm
Weight	8.6 kg	· Struts between tripod legs for increased stability
		· Central clamping of the struts
		· Integrated retractable rubber pads for non-slip use on hard surfaces
		· Continuous opening for instruments with plumb down facility
		· Side wheel for comfortable connection of instruments with 5/8" thread
		· Built-in circular bubble

## Builders Tripod BT Aluminium tripod



## FS 20 FS 20-D Aluminium Tripod



## FS 23 FS 23-D FS 23 W/S Aluminium Tripod



» Aluminium and wooden tripods for measuring instruments. Strong, durable and reliable.

BUILDERS TRIPOD BT	FS 20	FS 23
ART.-NO. 161	ART.-NO. 151	ART.-NO. 152
<ul style="list-style-type: none"> <li>· Flat head</li> <li>· 92–147 cm</li> <li>· 3.2 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Flat head</li> <li>· 105–165 cm</li> <li>· 3.5 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Flat head</li> <li>· 105–170 cm</li> <li>· 5.1 kg</li> </ul>
	FS 20-D	FS 23-D
	ART.-NO. 157	ART.-NO. 153
	<ul style="list-style-type: none"> <li>· Domed head</li> <li>· 105–165 cm</li> <li>· 3.5 kg</li> </ul>	<ul style="list-style-type: none"> <li>· Domed head</li> <li>· 105–170 cm</li> <li>· 5.1 kg</li> </ul>
		FS 23 W/S
		ART.-NO. 152 W/S
		<ul style="list-style-type: none"> <li>· Flat head</li> <li>· 105–170 cm</li> <li>· 5.1 kg</li> </ul>
<ul style="list-style-type: none"> <li>· For automatic levels</li> <li>· Quick clamp system</li> <li>· Flat head</li> <li>· Shoulder carrying strap</li> </ul>	<p><b>Aluminium Tripod FS 20</b></p> <ul style="list-style-type: none"> <li>· For light measuring instruments such as automatic levels</li> <li>· Quick clamp system</li> <li>· Flat head</li> <li>· Shoulder carrying strap</li> <li>· Diameter of tripod head 123 mm</li> </ul> <p><b>Aluminium Tripod FS 20-D</b></p> <ul style="list-style-type: none"> <li>· Same as FS 20 tripod, however, with domed head</li> </ul>	<p><b>Aluminium Tripods FS 23</b></p> <ul style="list-style-type: none"> <li>· Ideal for all measuring instruments</li> <li>· Quick clamp system</li> <li>· Flat head</li> <li>· Shoulder carrying strap</li> <li>· Diameter of tripod head 143 mm</li> </ul> <p><b>Aluminium Tripod FS 23-D</b></p> <ul style="list-style-type: none"> <li>· Same as FS 23 tripod, however, with domed head</li> </ul> <p><b>Aluminiumstativ FS 23 W/S</b></p> <ul style="list-style-type: none"> <li>· Same as FS 23 tripod, however, with screw clamp system</li> </ul>



## FS 30-XL Elevating Tripod



### FEATURES

### FS 30-XL

#### ART.-NO. 159

- Column / Flat head
- 166–380 cm
- 15.6 kg

- Adjustable range of centre column 104 cm
- Load up to 20.0 kg
- Combined quick and screw clamp system for extra stability
- Struts between tripod legs
- Retracted length 1.79 m for comfortable transport
- Made of aluminium (centre column) and fibre glass (tripod)
- Built-in circular bubble

## FS 24 FS 24 W/S Wooden Tripod



### TECHNICAL DATA

### FS 24

### FS 24 W/S

Flat head

Working range

Weight

105–170 cm

6.5 kg

#### ART.-NO. 154

- Robust wooden tripod for theodolites and total stations
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 140 mm

#### ART.-NO. 154 W/S

- Same as FS 24 tripod, however, with screw clamp system

## TN 14/15 Telescopic Levelling Staff



### TN 14

ART.-NO. TN 14, 4 m	484
ART.-NO. TN 15, 5 m	485

- A high quality levelling staff made of strong aluminium tubes available in 4 m and 5 m
- Silver anodised finish
- Front face cm-E graduation throughout total length
- Rear face graduation in mm for height measurements
- Slit to fix LR 7 Rod level
- Secure snap-in at each meter

### OPTIONAL

Nylon case with shoulder carrying strap, rod level LR 7

## TN 15-0 Telescopic Levelling Staff



### TN 15-0

ART.-NO. 486

High quality levelling staff similar to TN 15, except:

- Rear face graduated in mm with "0" beginning at the bottom

### OPTIONAL

Nylon case with shoulder carrying strap, rod level LR 7



### OPTIONAL

ART.-NO. 370

- Rod Level LR7
- For TN 14, 15, 15-0, BS 15-0
- Adjustable

### OPTIONAL

ART.-NO. 480

- Nylon case with shoulder carrying strap (w/o picture)

## TN 20-Kombi Telescopic Levelling Staff



### TN 20-KOMBI

ART.-NO. 482

- Made of strong aluminium tubes
- Graduation in mm
- Length 2.40 m
- Lower part adjustable in height for zero setting
- Including circular bubble and carrying case
- Including adjustable clamp for receiver
- Weight 0.9 kg
- Ideal for use with rotating laser levels
- Correct sign reading

## BS 15-0 Telescopic Levelling Staff



### BS 15-0

ART.-NO. 486-BS

A quality levelling staff for laser levels

- Front face cm-E graduation
- Rear face graduated in mm with "0" beginning at the bottom



## M 10 Precision Measuring Wheel



### M 10

ART.-NO. 110

- Wheel circumference 1 m
- Clamp for wheel
- Robust support allows M 10 to stand upright
- Dirt remover
- Precision counter with "0" reset
- Sturdy spokes offer low resistance to wind ensuring ease of use
- The highly visible colour of the wheel aids operator safety during use on roads
- Weight 2.7 kg

## ME 100 with kickstand Electronic Measuring Wheel



### ME 100

ART.-NO. 6425

- Wheel circumference 1 m
- Accuracy 0.1 %
- Range from 0 to 999,999.99 m
- Memory function
- Calculation of length, area and volume
- Many other functions



## MS 10S Precision Measuring Wheel



### M 10S

ART.-NO. 141

- Same as M 10, however:
- Heavy model with double-disk wheel made of metal
  - Weight 3.4 kg

## Carrying Bag for ME 100

CARRYING BAG ME 100  
(W/O PICTURE)

ART.-NO. 032

## M 10K and M 10T Case and Bag



### M 10K CASE

ART.-NO. 011

Sturdy case for M 10 and M 10S made from high-quality materials

### M 10T BAG

ART.-NO. 010

Bag for M 10 and M 10S made from high-quality materials





## Marking Spray



» For permanent wall / floor marking.

» Professional marking for building and road construction, civil engineering, construction sites, surveying jobs.

1 Patented one-hand safety cap with easy-touch release



1



### MARKING SPRAY

- For fast, clean and precise marking of asphalt, concrete, masonry, plaster, wood, earth and many other substrates
- Markings remain strongly visible up to 9 months
- Marking and sticking to any surface even if it is wet
- Reliable even at sub-zero temperatures (up to -20 °C)
- Patented one-hand safety cap with easy-touch release
- Guaranteed marking without painted fingers
- Colour coordinated cap
- Also easy to apply with gloves
- Self-cleaning system, can be 100 % emptied by spraying
- Environmentally friendly and non-hazardous to health

### COLOURS

ART.-NO. fluo orange	901
ART.-NO. fluo red	902
ART.-NO. fluo blue	903
ART.-NO. fluo yellow	904
ART.-NO. fluo green	905
ART.-NO. fluo pink	906
ART.-NO. red	911
ART.-NO. yellow	913
ART.-NO. white	915

- Content 500 ml
- Sales packing 12 cans per carton



## Marking Wheel

» Marking Wheel for comfortable marking with GEO-MARKER Marking Spray.

» No need to remove safety cap for use with marking wheel.

### MARKING WHEEL

ART.-NO. 940

- Length 83 cm
- Weight 0.6 kg

## Rubber Tape

- » Standard measuring tape. Blister packed in presentation display. Conforms to CE class II.



### RUBBER TAPE

ART.-NO. 3 m x 16 mm	M345012
ART.-NO. 5 m x 25 mm	M345014
ART.-NO. 8 m x 25 mm	M345015



## Fast Speed Tape

- » **4 x speed rewind.**
- » Nylon coated steel tape. Abrasion resistant and virtually unbreakable. Ergonomically designed to be comfortable and easy to use.



### FAST SPEED TAPE

ART.-NO. 30 m	M313030
ART.-NO. 50 m	M313050

- Tape width: 12.5 mm
- Graduation in mm
- Easy to grip
- Accuracy: CE class II



## RPT 1 Ranging Pole Tripod

### RPT 1

ART.-NO. 820

- Extendable tripod legs 77–128 cm, with secure clamps
- Weight 1.25 kg
- Clamp with adjustable ball-and-socket joint
- Supplied with carrying case



## RP 2 Metal Ranging Pole

### RP 2

ART.-NO. 800

- Each pole consists of 2 sections of 1 m length screwed together to make one pole of 2 m
- Universal 5/8" fitting
- White / red sections
- Metal tip
- Supplied as a set of 6 poles in a carrying bag

## 1 m Extension

### 1 M

ART.-NO. 810

- 1 m section for extending the ranging pole as required
- White / red colour
- 5/8" thread



## Mixer FM 1010 1010 W




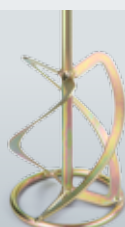
» Our mixers – suitable for all applications. Ergonomic design, strong performance. Powerful mixers for colour, mortar, concrete, etc. Ideally suited for construction sites.

TECHNICAL DATA		SUPPLIED WITH PADDLE H2-120 MM
		ART.-NO. M800500
Power	1010 W	<ul style="list-style-type: none"> <li>· e. g. for mortar, concrete, paint</li> <li>· paddle diameter 120 mm x length 600 mm</li> <li>· stirring capacity 10–25 kg</li> </ul>
Over-voltage protection	yes	
Weight	6 kg	
Speed adjustable	150–300 and 300–650 rpm	

## Mixer FM 1800 1800 W



TECHNICAL DATA		SUPPLIED WITH PADDLE H2-140 MM
		ART.-NO. M800507
Power	1800 W	<ul style="list-style-type: none"><li>· e. g. for mortar, concrete</li><li>· paddle diameter 140 mm x length 600 mm</li><li>· stirring capacity 30–50 kg</li></ul>
Over-voltage protection	yes	
Weight	6 kg	
Speed adjustable	150–300 and 300–650 rpm	
		INCL. PADDLE H3-160 MM
		<ul style="list-style-type: none"><li>· e. g. for mortar, concrete, paint, plaster, etc.</li><li>· paddle diameter 160 mm x length 600 mm</li><li>· stirring capacity 25–40 kg</li></ul>



## Paddles for mixers

### FM 1010 und FM 1800



- » For sticky and viscous materials: tile adhesive, bonding mortar, joint compound, ready-mixed plaster, floor screed, cement compounds, fillers, etc.

PADDLE H2	CAPACITY	DIAMETER	LENGTH AGITATOR	THREAD	
H2 120G	15 – 25 kg	120 mm	600 mm	M14	ART.-NO. M800590
H2 140G	25 – 35 kg	140 mm	600 mm	M14	ART.-NO. M800591
H2 160G	35 – 60 kg	160 mm	600 mm	M14	ART.-NO. M800592



- » For liquid, very viscous and fibrous materials in large quantities: wall paint, varnish, glaze, joint sealing compound, cements, lime, plaster, concrete, filler, floor screed, etc.

PADDLE H3	CAPACITY	DIAMETER	LENGTH AGITATOR	THREAD	
H3 L120G	15 – 25 kg	120 mm	600 mm	M14	ART.-NO. M800597
H3 L140G	25 – 35 kg	140 mm	600 mm	M14	ART.-NO. M800596



- » For liquid materials: wall paint, emulsion paint, tile adhesive, glue, wallpaper paste, etc.

PADDLE H4	CAPACITY	DIAMETER	LENGTH AGITATOR	THREAD	
H4 114G	15 – 40 kg	120 mm	600 mm	M14	ART.-NO. M800598



- » For liquid materials: wall paint, emulsion paint, paste varnish, bitumen, sludge, joint sealing compound, filler, bonding agent, etc.

PADDLE H7	CAPACITY	DIAMETER	LENGTH AGITATOR	THREAD	
H7 100G	15 – 25 kg	100 mm	600 mm	M14	ART.-NO. M800594
H7 120G	20 – 30 kg	120 mm	600 mm	M14	ART.-NO. M800595



- » For thin-bed adhesives and for larger volumes of liquid materials.

PADDLE DD 140	CAPACITY	DIAMETER	LENGTH AGITATOR	THREAD	
DD 140	20 – 40 kg	140 mm	600 mm	M14	ART.-NO. M800593



## L 23, L 25, L 50 Prism Poles



## B 18 Bipod

» For GPS Rods  
and Prism Poles



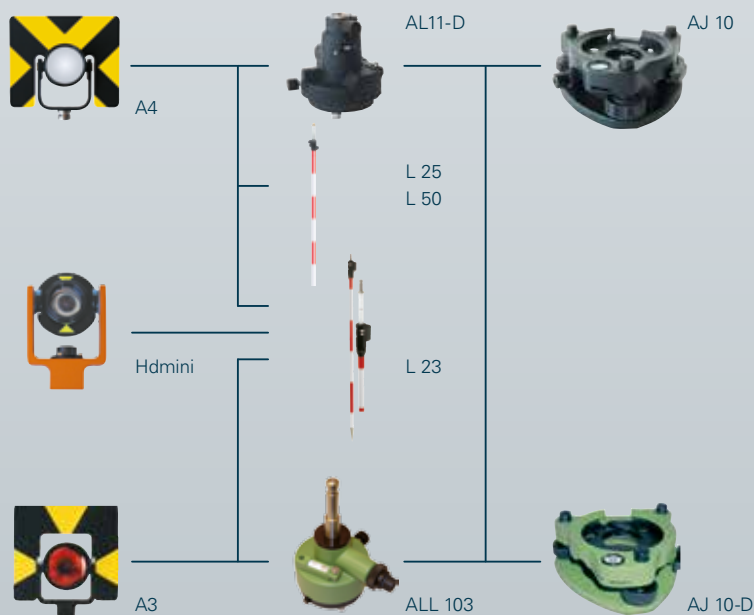
TECHNICAL DATA	L 23	L 25	L 50	B 18
ART.-NO.	223-S01, 223-S02, 223-S03	225	228	ART.-NO. 640
Length	122 – 208 cm	134 – 250 cm	160 – 500 cm	
Adapters		5/8"	5/8"	
223-S01:	optical square (Ø 10 mm)			
223-S02:	5/8"			
223-S03:	Leica pin			
Adapter height adjustable	no	yes	no	
Clamp type	Quick release clamp	Quick clamp	Quick clamp	
Circular bubble	yes	yes	yes	
Case	yes	yes	yes	
Weight	0.9 kg	1.5 kg	2.35 kg	
				<ul style="list-style-type: none"> <li>· Made of aluminium</li> <li>· Working range of legs 1.10 m to 1.80 m</li> <li>· Quick release clamping mechanism for legs</li> <li>· Possible rod diameters 19 to 38 mm</li> <li>· Staffs and poles secured with thumb screw</li> <li>· Weight 2 kg</li> <li>· Supplied with: leg clip and nylon case</li> </ul>

## G 20, G 25 GPS Antenna Poles



TECHNICAL DATA	G 20	G 25
ART.-NO.	630	635
Length	200 cm	136 – 248 cm
Adapter	5/8"	5/8"
Material lower tube	Carbon fibre	Carbon fibre
Material upper tube	Carbon fibre	Aluminium
Connection	Fixed	Telescopic
Clamp type	–	Screw clamp
Circular bubble	yes	yes
Case	yes	yes
Weight	0.6 kg	1.1 kg
Remark	lightweight	Steel locking pin can be inserted at 1.80, 2.00, 2.20 m to guarantee no slipping

### » Combination options



## Prism Set A3 (Leica Style)

ART.-NO. 401700

- Tilting prism holder made of plastic, yellow / black target made of metal
- Including bag
- Single prism Ø 62.5 mm
- Accuracy  $\pm 2''$
- Offset -34 mm
- Axis height 84 mm



## FP 50 Flat Prism

ART.-NO. 403400

- Tilting flat prism with one-sided reflective film, with padded bag
- Diameter 48 mm
- Offset 0 mm
- Axis height 88 / 112 mm (depending on adapter)
- Supplied with Leica, 5/8" and M 17 x 1,25 adapters
- Weight 130 g



## Prism Set A4

ART.-NO. 401800

- Tilting prism holder made of metal, yellow / black target made of metal
- Including bag
- Single prism Ø 62.5 mm
- Accuracy  $\pm 2''$
- Offset 0 / -30 mm
- Axis height 97 mm



## AL11-D Tribrach Adapter

ART.-NO. 400203

- AL11-D**
- Optical plummet
  - Height adjustable
  - Tubular vial
  - Available in black



## Mini Prism Pin Pole Set ADS 103

ART.-NO. 403100

- The pin pole has 3 sections that screw together to form a height of 0.6, 1.2 or 1.8 m.
- The adjustable 25 mm prism can be locked anywhere along its length.
- 0 mm offset
- Many accessories



## ALL 103 Tribrach Adapter

ART.-NO. 400205

- ALL 103**
- Leica adapter
  - Optical plummet
  - Tubular vial
  - Available in green



## Mini Prism Set Hdmini

ART.-NO. 403000

- With circular levelling vial, padded bag, 5/8" female base, hook for plumb bob
- Single prism Ø 25 mm
- Accuracy  $\pm 2''$
- Offset 0 / -30 mm
- Axis height 70 mm



## AJ 10 and AJ 10-D Tribrachs

ART.-NO. BLACK	400103
ART.-NO. GREEN	400101

- AJ 10**
- Without optical plummet
  - Available in black and green

ART.-NO. BLACK	400003
ART.-NO. GREEN	400001

- AJ 10-D**
- With optical plummet
  - Available in black and green



## Rod Levels

» For holding, fixing or suspending to ranging poles and levelling rods.



» LR 1

» LR 34

» LR 39

» LR 5

ROD LEVELS	
ART.-NO. LR 39, plastic	390
ART.-NO. LR 39, metal	391
ART.-NO. LR 1, metal, adjustable	310
ART.-NO. LR 34, metal, adjustable	330
ART.-NO. LR 5, wood	35w
LR 39 plastic	not adjustable
LR 39 metal	not adjustable
LR 34 + LR1 metal	adjustable
LR 5 wood	adjustable

## F1, F2, J2, F10, C1, F8 Optical Squares

» For staking out right angles or alignments in a straight line.



» F1 / F10

» J2

» C1

» F8

OPTICAL SQUARES		
Optical Square F1/1'		210
Optical Square F1/1', with metal housing		211
Optical Square F2/1'		220
Optical Square F2/1', with metal housing		222
Optical square J2		242
Optical Square F10		250
Optical Square F10 with metal housing		251
Optical Square F8 without case		280
Optical Square C1 with case		230
Zip case FE 1A		012
Press stud case FE 1B		013
Range pole adapter L1		277
Type	Housing	Accuracy
F1	metal or plastic	> 1'
F2	metal or plastic	> 1'
J2	plastic	> 2'
F10	metal or plastic	> 2'
C1	metal	> 3'
F8	plastic	> 1'

## Surveyors' Folding Frames

» Including carrying strap.



## Surveyors' Folding Rules



SURVEYORS' FOLDING FRAMES	
DIN A4, wood	541
DIN A4, plastic (red)	542
DIN A4, plexiglas (transparent)	543
DIN A3, wood	531
DIN A3, plastic	532

SURVEYORS' FOLDING RULES	
Surveyors' folding rule, 3 m, erect	410
Surveyors' folding rule, 2 m, erect	412
T1 Surveyors' field bag	601
<ul style="list-style-type: none"> <li>Made from the finest quality wood with strong joint springs</li> <li>Front side: Levelling graduations (E reading) 1 m black, 1 m red</li> <li>Reverse side: mm graduation in black</li> <li>Available in 2 m and 3 m lengths</li> </ul>	



## maxi Sales Display

### MAXI

ART.-NO. 111000

#### Dimensions

· Width	100 cm
· Depth	50 cm
· Height	200 cm

- Made of metal with a large glass door
- Wooden presentation area for 6 products, which can be secured underneath with a 5/8" tripod screw
- 1 small glass display (left), lockable
- 1 shelf in the bottom cabinet which is also lockable
- On left and right side tripods, levelling rods and floor-to-ceiling-pillar KS 3 can be positioned



## mini Sales Display

### MINI

ART.-NO. 110000

#### Dimensions

· Width	50 cm
· Depth	40 cm
· Height	50 cm

- Metal Housing
- On wooden presentation area 3 products can be fixed with 5/8" tripod screw
- Display with slideable glass door for arrangement of further products
- Lockable for security against thievery
- Can be integrated in existing Tegometall shelving system

» geo-FENNEL laser instruments are classified to laser class 2 and 3R.

» The laser class may be seen from technical data.

» Whichever is the latest version.



Laser radiation  
Do not stare into beam  
Laser class 2 according to  
DIN EN 60825-1:2008-5

$P \leq 1 \text{ mW @ } 635 \sim 670 \text{ nm}$



LASER RADIATION  
AVOID DIRECT EYE EXPOSURE TO  
THE LASER BEAM  
LASER CLASS 3R according to  
DIN EN 60825-1:2008-5

Green laser beam  
 $P \leq 5 \text{ mW @ } 522 \sim 542 \text{ nm}$   
Red laser beam  
 $P \leq 5 \text{ mW @ } 635 \sim 670 \text{ nm}$



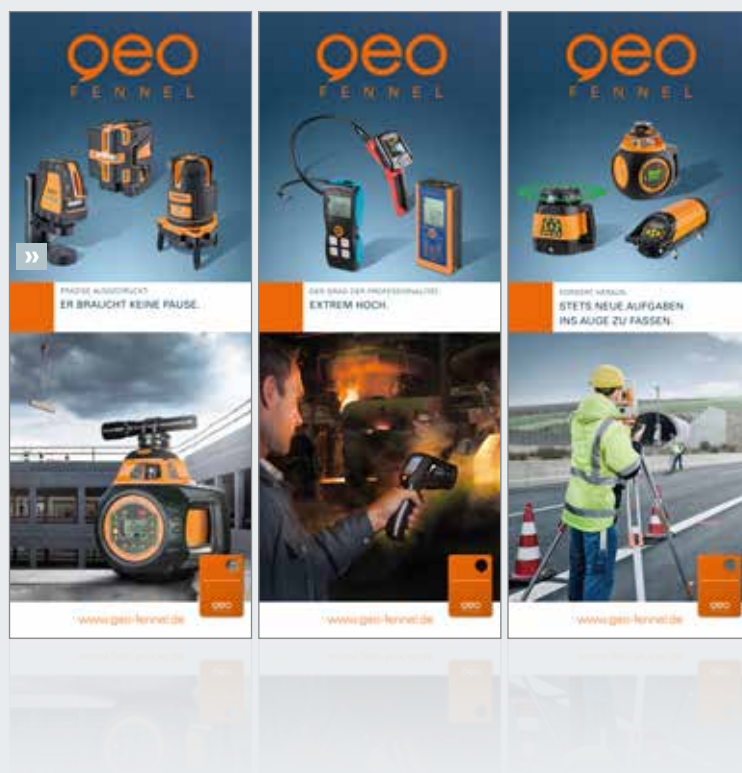
## Precision in measuring. Presence at exhibitions.

» Professional in presentation – geo-FENNEL also supplies posters and wall charts for exhibitions or various labels for sales displays and authorized dealers: Help to reach your customers with the marketing material from geo-FENNEL.

» Banners (roll-up) for exhibitions  
Size: 850 x 2,220 mm each



» Poster DIN A1



» Label for authorized dealers  
Size: 150 x 108 mm



» Car sticker  
Size: 100 x 114 mm

## Tailor-made information.

- » You know best which special requirements you have for our surveying equipment. For further details, data concerning our products, catalogue downloads and all the latest news and information, please visit our website.



Further information is available @

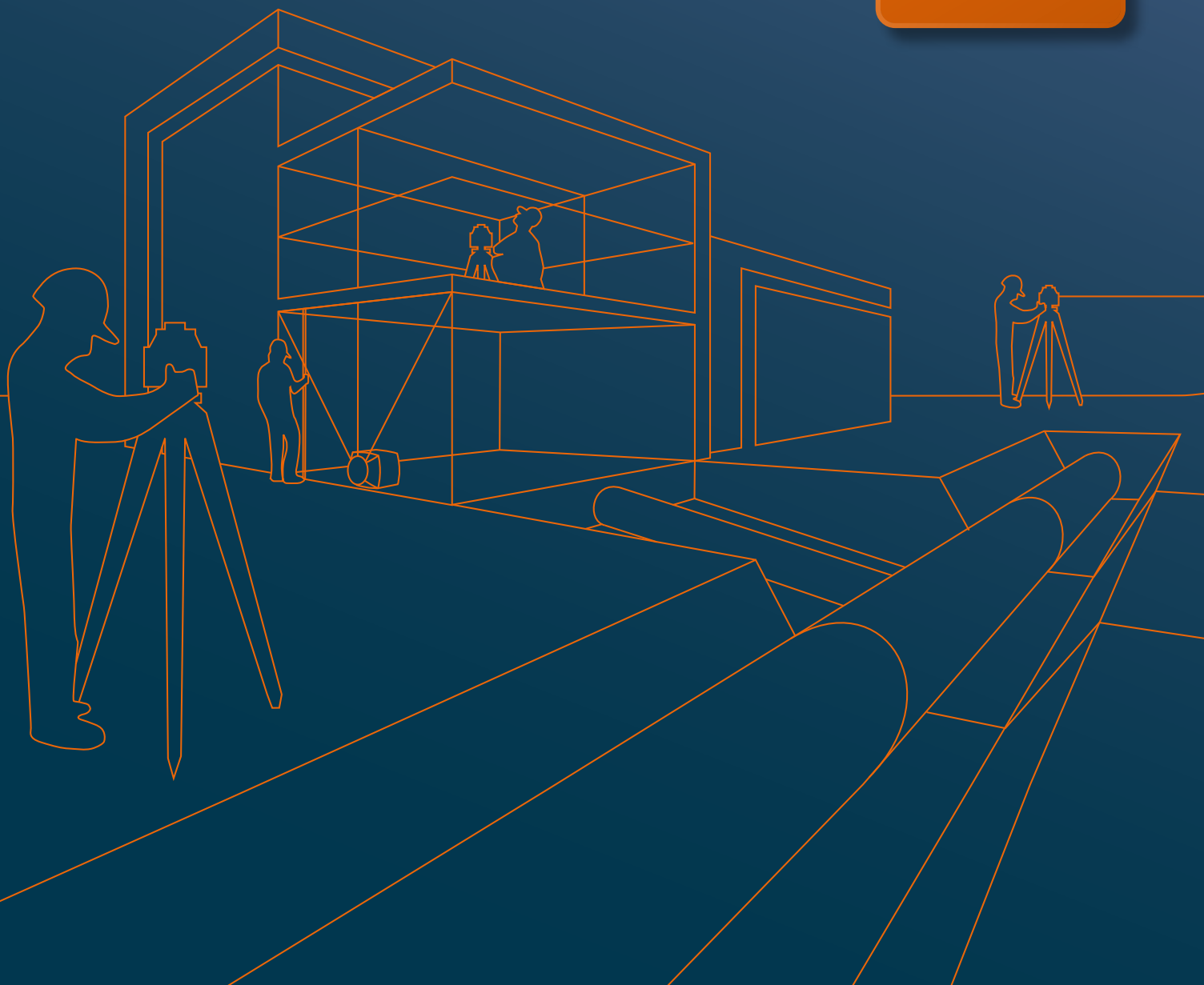
[www.geo-fennel.com](http://www.geo-fennel.com)





Precision by tradition

geo  
FENNEL



VISIT US @

[www.geo-fennel.com](http://www.geo-fennel.com)



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